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ABSTRACT

The pattern of responses to the Enhancement of Learning Inventory (ELI), designed to assess a teacher's belief about the effectiveness of methods for teaching each pupil, is expected to: (1) reliably describe characteristics on which teachers differ; (2) relate to individual differences in pupil background and behavioral characteristics, and (3) provide a mediating structure guiding the teacher's role performances and their impact upon pupil psycho-educational development. A study was conducted to examine these issues using the ELI judgments of 35 teachers of economically disadvantaged preschool children, most of whom were enrolled in Head Start. Individual differences among teachers were found to have satisfactory reliabilities on a variety of ELI measures. Teacher belief patterns clearly were functionally related to pupil characteristics. Most striking was the extent to which pupil cognitive skills and response tempo at the time of preschool entry influenced the teachers' beliefs about effective teaching methods. While there was evidence that teacher belief patterns influence aspects of pupil psycho-educational development, the present findings indicated that pupil behavioral characteristics may have a greater impact upon teacher behavior than vice-versa. It is clear that the teacher's manner of coping with individual differences in children's intital receptivity to classroom learning is a critical factor in subsequent relationships between teacher and child. (For related document, see TM 003 020.) (Author/KM)

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DISADVANTAGED CHILDREN

AND THEIR FIRST SCHOOL EXPERIENCES

ETS-Head Start Longitudinal Study

Preschool Teachers' Beliefs on Effective Teaching Techniques and Their Relationships to Pupil Characteristics

Walter Emmerich

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DISADVANTAGED CHILDREN AND THEIR FIRST SCHOOL EXPERIENCES

ETS-Head Start Longitudinal Study

Preschool Teachers' Beliefs on Effective Teaching Techniques and Their Relationships to Pupil Characteristics

Walter Emmerich

YOUNG CHILDREN AND THEIR FIRST SCHOOL EXPERIENCES

A LONGITUDINAL STUDY

Report under

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Walter Emmerich

Princeton, New Jersey

April 24, 1973

Chapter 1

Introduction

This study investigated preschool teachers' beliefs about effective methods of teaching and relationships between such beliefs and certain pupil background and behavioral characteristics. This approach to belief systems as mediators of role behavior (Emmerich, 1969; Harvey, Prather, White, Alter & Hoffmeister, 1966; Wehling & Charters, 1969) was intended to supplement other approaches to classroom measurement incorporated into the ETS-Head Start Longitudinal Study (ETS, 1968, 1969, 1970), including measures of teacher status, background, and personality, actual teacher behaviors in classrooms, and child behaviors in the classroom.

The Enhancement of Learning Inventory (ELI) was designed to assess a teacher's judgments on the effectiveness of an array of teaching techniques for fostering the classroom learning of each of her pupils. The remainder of this chapter introduces this instrument and its rationale, while Chapter 2 describes some of its properties, including reliability estimates and interrelationships among measures. Chapter 3 deals with individual pupils as units and reports on the nature of child background and behavioral characteristics found to influence teacher ELI judgments of pupils during the preschool year. Chapter 4 defines teachers as the units of analysis, and relates individual differences among teachers on ELI measures to pupil characteristics both prior to preschool entry and during the second semester of the child's year in preschool. The pupil characteristics of interest include (a) certain family background characteristics, including maternal education, (b) the child's sex and age at time of entry into the classroom, and (c) the child's cognitive skills and style (response tempo) prior to preschool entry and during the second semester of preschool.

Analyses of functional relationships reported in Chapters 3 and 4 provide initial evidence on the predictive validities of ELI measures treated as measures of pupils and of teachers, respectively. When the nature of the variable entering into a functional relationship with ELI is reasonably well known, as in the case of certain cognitive skills, such a relationship helps clarify the meaning of the ELI measure. When the nature of the variable entering into the functional relationship with an ELI measure is less well understood, as is the case for response tempo at this young age, then such a relationship sheds light on the meaning of the variable functionally related to the ELI measure.

Enhancement of Learning Inventory (ELI)

The ELI instrument asks the teacher to rate each child in her classroom with regard to the efficacy of each of 15 teaching techniques for enhancing the classroom learning of that child. Ratings vary from 3 ("very effective") to 0 ("ineffective"). Table 1 lists the 15 items in the order presented to teachers. The complete instrument is found in Appendix A.

Since the dimensionality of teacher behavior is not well understood, especially at the preschool level, no single dimensional scheme guided selection of the 15 ELI items. Nevertheless, attention was given to sampling a variety of contents suggested by previous dimensional analyses of the teacher domain (Bussis & Chittenden, 1970; Medley & Mitzel, 1963; Ryans, 1960; Sears & Dowley, 1963). For example, consideration was given to such contrasts as teacher structuring of child instruction vs. granting autonomy to the child, individual vs. group teaching, giving evaluative feedback vs. no such feedback, and positive vs. negative feedback. Items were stated to be applicable to the early primary grades as well as to the preschool period.

Table 1

Enhancement of Learning Inventory (ELI) Items

Item No.	Item Description
1.	Take initiative in planning and setting up learning experiences for the child.
2.	Give the child individual instruction.
3.	Inform the child when he makes a mistake.
4.	Express pleasure or praise when the child's behavior meets your standards.
5.	Instruct a group of children simultaneously, with the child as one member of this group.
6.	Instruct by doing the task first, then letting the child imitate you.
7.	Increase the difficulty or complexity of a learning task.
8.	Express displeasure or criticism when the child's behavior does not meet your standards.
9.	Instruct by explaining a task's requirements to the child verbally before or while the child does the task.
10.	Inform the child when he makes a correct response.
11.	Give the child considerable freedom to choose and carry out learning tasks on his own.
12.	Let the child learn directly from other children in the classroom.
13.	Express approval when the child's behavior meets the child's own standards.
14.	Encourage the child to express his feelings, ideas, and/or skills.
15.	Let the child discover his own mistakes.

This procedure made it possible for future investigations to study age-grading in teachers' judgments and longitudinal trends in pupil performances as a function of teacher ELI characteristics in successive years of school.

It was anticipated that limited teacher time (and motivation) would place definite constraints on the number of items that could be included in ELI. For reasons that will become apparent when discussing the scoring paradigm, the decision was made to include a variety of rather distinctive teaching methods rather than attempting to tap one or more dimensions by forming item subsets that were homogeneous in content.

Each teacher rates the pupils in her classroom on each of the 15 items. Measures are derived from each teacher's pupil x item matrix. Certain of these measures deal with the substantive contents of teaching style, while others deal with the organization of the teacher's beliefs about her pupils. Rationales for these measure derivations are presented below; evidence for their reliabilities and validities are provided in subsequent chapters.

Teacher Measures

The teacher's mean judgment (across her set of pupils) on a given item reflects her general endorsement of the teaching technique depicted by the item. In view of the method of item selection noted above, it seemed unlikely that clearly defined multiple dimensions would emerge from the correlational structure of these 15 item-means. One possibility was that a general factor would emerge, representing individual differences either in (a) teachers' generalized optimism about the ease of enhancing learning irrespective of pupil variations and teaching technique, or (b) a response set elicited by the Inventory.

Of particular interest were measures reflecting underlying beliefs about the teaching role. Such measures were derived by treating each teacher's pupil x item matrix in the fashion of an analysis-of-variance (Emmerich, 1969; Emmerich, Goldman & Shore, 1971). (It should be noted that this approach was used to derive measures, not to test hypotheses on mean differences between groups.) A teacher's n pupils were arranged as columns in the matrix and the 15 teaching techniques (items) were arranged as rows. The Column (C), Row (R), and Column x Row (CxR) variances were then computed for each teacher. The R measure indicates amount of profile scatter for the teacher, an index of sharpness of technique differentiation by her. Previous research suggested that parents reporting sharply differentiated capacities for implementing a variety of child-rearing methods also exhibited other signs of competency in the parental role (Emmerich, 1969). The possibility that a similar effect might be operative in teachers was of interest in the present study.

The C and CxR measures were of special interest because they index two distinct kinds of "teacher individuation." A high C score signifies that the teacher believes her pupils differ considerably in their general learning capacities irrespective of which particular technique the teacher happens to employ. One possibility is that such a belief is a relatively fixed attribute of the teacher, having long-term stability across her classrooms over a number of years. Another possibility is that such a belief, while having short-term stability for a given set of pupils, varies in accordance with the characteristics of the teacher's pupils in a given year. For example, if a teacher happens to have a relatively large number of children having relatively low levels of cognitive skills upon

entry into her classroom, a high C score may reflect her belief that such children are especially difficult to teach. Evidence on these alternative interpretations is provided in Chapter 4.

A high CxR score indicates that the teacher believes that different teaching-technique profiles are best suited for different pupils in her classroom. This measure taps the concept of teacher individuation in a more differentiated sense than does the C score. Teachers high on this attribute may be those who are especially sensitive to the need to individualize instructional techniques by taking account of children's individual learning capacities or styles. However, it was not clear that such a pattern would necessarily enhance pupil learning, since by adopting different patterns of teaching for different pupils the teacher might provide inconsistencies as a model, and there is evidence that parents who adopt different child rearing techniques for implementing different child rearing goals also exhibit signs of maladaptive behavior (Emmerich, 1969). Moreover, just as in the case of C scores, it was unclear whether the CxR measure reflects a relatively fixed teaching style or whether it reflects a more transient belief structure determined by pupil characteristics in a given year.

Pupil Measures

ELI was designed primarily to yield measures of teacher characteristics, but since it also provides judgments on each teacher's pupils, it might also assess "ease of learning" in individual children. However, such an application would have to take into account that child ratings on ELI are confounded by individual differences among teachers on the measures described above. For example, teacher A's mean endorsement of Item 1 (across her

pupils) might be a point higher on the scale than teacher B's mean endorsement of Item 1 (across her pupils). Under these circumstances a given child might be judged by each teacher to be at about her mean on Item 1, but since these two teachers' means differ, their judgments of the child would differ by about a point on the scale.

Nevertheless, it is still possible to standardize items within teachers and to score each child's deviation from the teacher's mean on each item in standard score units. Such a measure taps individual differences among pupils within classrooms, while controlling for individual differences among teachers in their ELI judgments. Moreover, the sum of each pupil's standard scores across the 15 items would represent an index of the child's "ease of learning," irrespective of technique. Since these standardizing procedures control for individual differences among teachers in item-central tendencies and variabilities, child scores based upon them could be pooled across teachers and then related to other variables in the study. This procedure was adopted when evaluating the impact of child background and behavioral characteristics upon item endorsements (and their sum), as reported in Chapter 3.

Chapter 2

Instrument Properties

Sample

Sampling of teachers in the present study was influenced by the Longitudinal Study's goal of monitoring the classroom experiences of a target group of children having a reasonable probability of enrolling in Head Start during 1969-1970. Major criteria for selecting study sites were that they should be poverty areas in different regions of the continental United States. Selection criteria for subjects were that they should be living in areas served by year-long Head Start programs feeding into primary schools cooperating in the larger study, and should be eligible for first grade, on the basis of birthdate, in the fall of 1971. The present data represent part of that collected in Portland, Oregon; St. Louis, Missouri; and Trenton, New Jersey, during 1969 and 1970. Detailed descriptions of the total initial sample and of data collection procedures are found in Project Reports 71-19 (Shipman, 1971) and 69-12 (ETS, 1969), respectively.

Teachers completed ELI during the spring of 1970 as part of a battery of teacher instruments, and received a nominal payment for their cooperation. They were asked to provide ELI judgments on those children targeted as subjects in the larger Longitudinal Study. In selecting teachers for the present analyses, class size had to reach at least eight pupils on whom ELI measures were complete. Thirty-five teachers met these criteria; 18 from Portland, 11 from St. Louis, and 6 from Trenton. Twenty-seven teachers taught in Head Start, four in day care centers, and four in other kinds of preschool settings. Eleven of these teachers had

different pupils in their morning and afternoon sessions, providing an opportunity to estimate reliabilities of ELI teacher measures. Class size for teachers included in the sample ranged from 8 to 40, with a median of 18.5.

The above procedures yielded complete ELI protocols on a total of 563 children. Since not all measures of interest in this study were available on some of these children, the actual samples used in Chapters 3 and 4 were reduced in size. Nevertheless, certain descriptive characteristics of the 563 children can serve as approximations of these characteristics for all analyses in the body of this report. Fifty-three percent of these pupils were boys, 78% were black, and their median age at the approximate time of entry into a preschool program (September 1, 1969) was 52 months.

The findings presented in this report cannot be interpreted as representing typical styles of teaching within the Head Start Program. On the other hand, functional relationships established between child characteristics and teacher ELI measures do have relevance for understanding mutual influences between pupils and teachers that might bear on Head Start policy decisions.

Reliability Estimation

Eleven of the thirty-five teachers taught morning and afternoon sessions consisting of different pupils. This subsample was used to estimate reliabilities of the ELI teacher measures, including the mean item scores, total score, and the R, C, and CxR scores. Since this procedure estimates teacher agreement across similar pupil cohorts at the same point in time, any resulting claims for teacher consistency are limited. Evidence for this kind of reliability does not bear on the

long-term stabilities of ELI teacher measures. Nor is it known whether the reliabilities reported here can be generalized to the situation where each teacher judges pupil cohorts that differ markedly in relevant ways. Finally, since the present reliability estimates refer to aggregate indexes for classes of pupils, they do not bear directly on the reliability of ELI judgments applied to individual pupils within classrooms.

Item Properties

Table 2 presents item means and standard deviations ranked from high to low (N = 35). (Here as elsewhere in this report scores for those teachers having different classes in the morning and afternoon were computed separately by session and then averaged.) The ranking of means suggests that techniques having positive evaluative connotations were ranked higher than those having negative connotations. However, the sizes of the standard deviations also indicate that there was ample opportunity for individual differences in item ranking (profiles) to occur.

Table 3 provides item reliability estimates for those teachers having different pupils in their morning and afternoon sessions (N = 11). These reliability estimates generally were quite high, with a median of .84.

Item Structure

Table 3 also reports intercorrelations among teacher (mean) item endorsements (N = 35). In a principal components analysis, the first component accounted for 36% of the total variance, while the second

Table 2

Teacher Item Means (Ranked) and Standard Deviations (N = 35)

Item No.	Item Description	$\bar{X}$	SD
10	Inform child when he makes a correct response	2.70	.32
4	Express pleasure or praise when child's behavior meets your standards	2.58	.43
13	Express approval when child's behavior meets child's own standards	2.55	.43
2	Give child individual instruction	2.54	.41
14	Encourage child to express feelings, ideas, and/or skills	2.46	.46
1	Take initiative in planning and setting up learning experiences for child	2.45	.55
9	Instruct by explaining a task verbally to child before or while child does the task	2.34	.49
6	Instruct by doing the task first, then letting child imitate you	2.27	.41
11	Give child considerable freedom to choose and carry out task on own	2.21	.48
5	Instruct a group of children simultaneously, with child as one member of this group	2.19	.38
12	Let child learn directly from other children in classroom	2.02	.62
7	Increase the difficulty or complexity of a learning task	2.00	.57
3	Inform child when he makes a mistake	1.88	.56
15	Let child discover own mistakes	1.84	.69
8	Express displeasure or criticism when child's behavior does not meet your standards	1.44	.66

Table 3

Item Reliabilities (N = 11) and Intercorrelation Matrix (N = 35) for Teacher Item Means

Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	(.93)														
2	.46	(.92)													
3	.43	.06	(.82)												
4	.47	.22	.36	(.84)											
5	.02	-.13	.15	.01	(.76)										
6	.52	.49	.42	.20	.37	(.78)									
7	.36	.13	.31	.23	.51	.36	(.91)								
8	.05	.14	.40	.21	.13	.20	.10	(.84)							
9	.44	.22	.46	.63	.15	.36	.27	.22	(.85)						
10	.30	.54	.17	.61	.12	.42	.43	.10	.58	(.80)					
11	.21	.08	.16	.00	.50	.21	.58	.17	.20	.17	(.75)				
12	.23	.18	.06	-.04	.61	.42	.59	-.10	.20	.24	.67	(.91)			
13	.27	.42	.07	.23	.00	.33	.21	.10	.34	.63	.15	.13	(.86)		
14	.33	.31	.35	.11	.33	.44	.60	-.03	.30	.49	.57	.55	.37	(.80)	
15	.27	.16	.13	.11	.37	.29	.78	-.05	.21	.44	.74	.63	.33	.64	(.92)

was bipolar and accounted for 17% of the total variance. Due to the small number of items and subjects, and because of the large first principal component on which most items loaded (followed by a bipolar factor), it was concluded that factor rotation could reveal only highly correlated factors that would be difficult to define and to replicate.

The fact that most items loaded on the first principal component suggests that a common process was tapped by most ELI items. While the nature of this process remained unknown at this point in the analysis, it was decided to create an additional ELI teacher measure based upon the teacher's total score (sum of the 15 items). In addition to its empirical grounding in the correlational structure, it was felt that this measure might tap the teacher's generalized optimism about the efficacy of the total set of teaching techniques for all of her pupils, a variable that could be related to child background and behavioral characteristics. Moreover, inclusion of this measure rounded out part of the scoring paradigm in terms of profile analysis, with the total score representing profile level, the R score representing profile scatter, and the item rankings representing profile shape. The reliability estimate for the total score was .84 (N = 11).

Reliabilities of Derived Measures

Again, reliabilities were estimated for the group of eleven teachers having different pupils in their morning and afternoon sessions. Reliabilities for R, C and CxR were .64, .85, and .83, respectively. Square root transformations also were computed since these measures are variances which tend to be skewed. Reliabilities for the transformed scores did not differ appreciably from the above (.76, .84, .79, respectively).

Reliabilities of Profiles

Teacher variations in item profiles give substance to individual differences in teaching styles. For convenience of interpretation, item means (across pupils within teachers) were standardized, so that teacher profiles were expressed in terms of (standard score) deviation units from the item means given in Table 2.

Are such profiles reliable? To answer this question, the standard score profiles were intercorrelated for the 11 teachers having different pupils in their morning and afternoon sessions. Morning x afternoon profile correlations within the 11 teachers ranged from .24 to .97, with a median of .83. To provide a baseline for evaluating these reliability estimates, profile correlations between teachers also were considered. Each teacher's within-session profile was correlated with that of the other ten teachers, generating twenty profile correlations per teacher per session. The median of these profile correlations by teacher (within sessions) was then determined. These average between-teacher profile correlations ranged from -.30 to .28, with a median of .14 ($N = 22$). Thus, within-teacher profile correspondence was appreciably greater than (average) between-teacher profile correspondence.

Profile Subgroupings

While the above analyses revealed that profile correspondences between teachers generally were low, it was of theoretical interest to identify the teaching styles of teachers whose profiles were similar to one another and also opposite to another subgrouping. If such subgroupings could be identified, then it would be of interest to evaluate their relationships with child background and behavior.

Deviation profiles for the 35 teachers were intercorrelated. With the aid of Smallest Space Analysis (Lingoes, 1965), the correlation matrix was arranged to reveal which teachers could be grouped according to the following criteria: (1) at least two teachers were needed to define a subgroup, signified by positive correlations among their profiles; (2) there would need to be an opposite group, signified by negative profile correlations; (3) if more than two contrasting subgroups could be identified, non-contrasting subgroups should have low profile correlations.

This procedure identified four subgroups, with Subgroup A profiles (3 teachers) contrasting with Subgroup C profiles (4 teachers), and Subgroup B profiles (2 teachers) contrasting with Subgroup D profiles (4 teachers). Profile correlations among all members of these subgroups are given in Table 4.

Since only 13 of the 35 teachers could be placed readily into one of these subgroups, it is clearly inappropriate to refer to the four subgroups as "types" of teaching styles in any fundamental sense. Indeed, a most striking feature of the above analysis was that so few teachers could be placed into subgroups, suggesting that at least during the preschool period teaching styles as assessed by ELI have more uniqueness than commonality. Thus, while differences among the four subgroups could have important implications for teacher-pupil relationships at this age, there is no implication that most teachers in Head Start or other preschool programs can be classified into one or another of these subgroupings.

The substantive nature of subgroup profiles and their contrasts are given in Table 5. This table provides the mean deviation score within

Table 4

Subgroup Profile Intercorrelations

	Subgroup												
	A			B		C				D			
Teacher	1	2	3	1	2	1	2	3	4	1	2	3	4
A-1													
A-2	.48												
A-3	.42	.65											
B-1	-.02	.26	.27										
B-2	.06	.10	.20	.53									
C-1	-.52	-.47	-.51	-.02	.06								
C-2	-.71	-.60	-.54	.03	.03	.79							
C-3	-.61	-.49	-.41	-.10	.20	.73	.68						
C-4	-.24	-.36	-.31	.01	-.04	.79	.51	.62					
D-1	.09	.25	-.05	-.51	-.45	-.08	-.12	-.04	-.22				
D-2	.01	.05	-.27	-.55	-.59	-.19	-.05	-.22	-.21	.33			
D-3	.18	-.08	-.25	-.65	-.29	-.06	.00	-.06	-.15	.71	.47		
D-4	.02	-.19	-.33	-.87	-.43	.15	.11	.24	.16	.39	.68	.53	

Table 5

Profile Contrasts Between Subgroups (Standard Scores)

Subgroups A x C				Subgroups B x D			
	Means				Means		
Item	A	C	Dif.	Item	B	D	Dif.
12	1.20	- .11	+1.31	11	.50	-1.08	+1.58
14	.93	- .18	+1.11	8	.25	- .99	+1.24
15	1.26	.31	+ .95	3	.25	- .67	+ .92
11	.96	.09	+ .87	12	.27	- .61	+ .88
5	.91	.36	+ .55	15	.20	- .24	+ .44
13	.93	.53	+ .40	5	- .49	- .60	+ .11
7	.84	.52	+ .32	7	.20	.10	+ .10
2	.76	.48	+ .28	14	- .13	- .12	- .01
6	.67	.53	+ .14	9	- .50	- .31	- .19
10	.31	.41	- .10	13	.01	.27	- .26
1	- .38	.53	- .91	6	- .58	.11	- .69
9	- .90	.40	-1.30	1	- .59	.58	-1.17
8	- .75	1.41	-2.16	10	-1.00	.60	-1.60
4	-1.70	.59	-2.29	4	- .97	.76	-1.73
3	-1.40	1.11	-2.51	2	-1.15	.66	-1.81

subgroups for each item and the difference score between the contrasting groupings for each item. As seen in Table 5, A is relatively high and C is relatively low on the following items:

11. Give the child considerable freedom to choose and carry out learning tasks on his own.
12. Let the child learn directly from other children in the classroom.
14. Encourage the child to express his feelings, ideas, and/or skills.
15. Let the child discover his own mistakes.

On the other hand, A is relatively low and C is relatively high on the following items:

3. Inform the child when he makes a mistake.
4. Express pleasure or praise when the child's behavior meets your standards.
8. Express displeasure or criticism when the child's behavior does not meet your standards.
9. Instruct by explaining a task's requirements to the child verbally before or while the child does the task.

Interestingly, however, both A and C share above-average deviation scores on the following items:

2. Give the child individual instruction.
5. Instruct a group of children simultaneously, with the child as one member of this group.
6. Instruct by doing the task first, then letting the child imitate you.
7. Increase the difficulty or complexity of a learning task.
10. Inform the child when he makes a correct response.
13. Express approval when the child's behavior meets the child's own standards.

It would appear that while both the A and C subgroups employ a common core of instructional techniques, they differ in their control strategies with their pupils. A grants the child considerable autonomy in structuring his classroom activities without utilizing either positive or negative feedback for controlling purposes, whereas C utilizes positive and negative feedback as a controlling strategy without granting the child autonomy. It would be difficult to argue a priori that teaching style A or C is superior for enhancing the child's psycho-educational development. This question will be explored empirically in Chapter 4.

As seen in Table 5, B is relatively high and D is relatively low on the following items:

3. Inform the child when he makes a mistake.
8. Express displeasure or criticism when the child's behavior does not meet your standards.
11. Give the child considerable freedom to choose and carry out learning tasks on his own.
12. Let the child learn directly from other children in the classroom.

On the other hand, B is relatively low and D is relatively high on the following items:

1. Take initiative in planning and setting up learning experiences for the child.
2. Give the child individual instruction.
4. Express pleasure or praise when the child's behavior meets your standards.
10. Inform the child when he makes a correct response.

B appears to be a laissez-faire teacher who grants children considerable autonomy, but who, at the same time, tends to impose negative sanctions when the child's behavior violates certain norms. By contrast, D structures the learning experiences of her pupils and provides positive feedback when the child's behavior meets her standards. One gets the impression from this contrast that B sees her role as one of "minimal caretaking", while D sees her role as one of "providing a supportive learning environment." The possibility that D is a more effective teacher than B is evaluated in Chapter 4.

Interrelations Among Derived Measures

Intercorrelations among teachers' (1) total scores, (2) R scores, (3) C scores, and (4) CxR scores are given in Table 6. The table excludes intercorrelations for the square root transformations, since the latter were so highly correlated with their untransformed equivalents (.98, .97, .99 for R, C, and CxR, respectively).

Table 6

Intercorrelations Among Derived Measures (N = 35)

		1	2	3
1	Total Score			
2	R-score	-.17		
3	C-score	-.54	-.23	
4	CxR score	-.35	.14	-.05

Inspection of Table 6 reveals that R, C, and CxR are reasonably independent of one another, but that C and CxR are not independent of

the total score. As noted earlier, the latter outcome was not unexpected because a high total score reduces the amount of teacher individuation variance within the pupil x item matrix.

In Chapter 4, teachers are divided into several classifications based upon ELI teacher measures described in the present chapter. Since these classifications are used as independent variables in separate designs, it was important that the different classifications not be confounded. For example, it would be possible to compare teachers with high C and CxR scores with non-individuating teachers, but only when the latter did not also have high total scores, since high individuation was precluded by a high total score. Moreover, it was important that classifications based upon the quantitative indexes of total scores, R score, C score, and CxR score not be confounded with qualitative classifications in terms of substantive profile (Subgroups A, B, C, D).

In fact, there was one instance in which such confounding clearly occurred. Teachers whose profiles most resembled those of Subgroups A and D tended to have high R scores, whereas teachers whose profiles most resembled those of Subgroups B and C tended to have low R scores. In short, amount of profile scatter was not independent of the substantive nature of the profile. While the R score was available on many more teachers than could be grouped in terms of their substantive profiles, the latter groupings were of greater theoretical interest in the present study. For this reason, the R score is not used in Chapter 4. While there may be an intrinsic link between amount of profile dispersion and the substance of teaching style, the suspicion remains that such a link may be a methodological artifact created by the study's method of item sampling.

Chapter 3

Influences of Pupil Characteristics upon ELI Judgments

Introduction

This chapter examines how pupil characteristics influence teacher judgments on (a) the effectiveness of different teaching techniques, and (b) readiness of the child to learn irrespective of the particular teaching technique employed. Empirical answers to these questions not only provide validating evidence on ELI, but, more importantly, they extend our understanding of how pupil characteristics influence teacher judgments in ways relevant to the teaching role. Such judgments may create expectancies about pupil skills and style which mediate teacher role performances.

It was expected that pupil characteristics that impinge most directly upon the teaching role would have the greatest impact upon ELI judgments. Child behavorial tendencies engaged by the learning process in the classroom obviously provide very direct cues for the teacher. To evaluate the impact of such processes, measures of cognitive skills and style were selected from the battery of test instruments administered as part of the larger Longitudinal Study. Since these instruments were administered prior to the child's entry into preschool, they measured pupil characteristics that were probably manifest at the beginning of the school year.

The child's sex and age at the time of entry into preschool (estimated as of September 1, 1969) also were obvious pupil characteristics that could influence teachers' judgments on the effectiveness of different teaching techniques.

Also of interest were family background characteristics which, while not so directly impinging on the teacher, might contribute to the formation

of pupil behavioral dispositions which influence teacher ELI judgments. Here maternal education served as a general index of family socioeconomic status. In addition, a variety of family background measures were considered, as described below.

Measures of Cognitive Skills

As part of the larger Longitudinal Study, a variety of cognitive tasks were administered to children individually by trained examiners during 1969 (Shipman, 1971). Factor analysis revealed that a number of these tasks loaded on a general information-processing factor. Some measures loading on this factor tapped cognitive skills (e.g., Preschool Inventory), while others assessed motivation related to performance on cognitive tasks (e.g., Child Cooperation Rating during the Mother-Child Interaction task). In the present study, one measure loading on the general factor was selected from each of the four task batteries, each battery typically administered to the child on a different day. The measures selected were (1) Preschool Inventory (total score), (2) Child Cooperation Rating on the Hess and Shipman Eight-Block Sorting Task, (3) Matching Familiar Figures Task (mean errors per valid item), and (4) Peabody Picture Vocabulary Task, Form A. Reliability estimates for these measures based upon the larger total Year 1 sample were .92, .81, .70, and .96, respectively. (This estimate was based upon the across-task correlation in the case of the Cooperation Rating.) Detailed information on the procedures of data collection and scoring, measure properties, factor structures, and measure correlates are found in Shipman, 1971, 1972b, 1972c.

It was desirable to correct the child's score on each of these tasks for age at time of testing. On conceptual grounds, it was of some importance

that estimates of child cognitive skill be unconfounded with the child's age at the time of entry into preschool. Moreover, performance on the above cognitive tasks was known to improve with age, even over a period of a few months (Shipman, 1972c). Since child assessments in Year 1 occurred throughout the spring and summer of 1969, raw measures were somewhat influenced by when the child happened to be tested during this interval. Consequently, each child's score on each of the above tasks was corrected to a common age-at-measurement ($\bar{X}$ = 51 months), based in most instances upon the child's age at the time the Preschool Inventory was administered. This procedure partialled out the child's predicted score on each task on the basis of the child's age at the time of testing. All findings reported using these tasks are based upon these regressed scores.

Measures of Response Tempo

Several measures of response latency defined a second factor of response tempo in the Year 1 battery (Shipman, 1971). These included (1) average time to respond (log 10) on the Sigel Object Categorization Task, (2) mean log (X + 1) of response times on the Matching Familiar Figures Task, and (3) average time for first response on the Preschool Embedded Figures Task (log 10). Reliability estimates for these measures were .77, .90, and .77, respectively. Again, detailed information on these measures is found in Shipman, 1971, 1972b, 1972c. Since these measures generally were unrelated to child age during Year 1, age-corrected scores were not derived.

Interrelations Among Task Measures

Table 7 presents intercorrelations among the above task measures for those subjects also having ELI measures. The correlational pattern is quite consistent with that found for the larger sample (Shipman, 1971), including

relatively low associations between measures of cognitive skill and response tempo.

Table 7

Intercorrelations Among Task Measures in Year 1

Measure		1	2	3	4	5	6
Preschool Inventory, age-corrected	1						
Cooperation Rating, age-corrected	2	-.29					
MFF, age-corrected	3	-.40	.16				
PPVT, age-corrected	4	.55	-.15	-.33			
Sigel Latency	5	.04	.01	.01	.19		
MFF Latency	6	.01	.11	-.06	.14	.39	
PEFT Latency	7	-.01	.14	.03	.20	.28	.23

Note.--Cell N's varied from 226 to 353, with a median of 315.

Independent Variable Classifications: Task Measures

Each of the above seven independent variables was evaluated in a series of ANOVAS in which ELI item judgments served as the dependent variables. (These analyses are reported in a later section.) Three levels for each of these variables were determined so that non-linear effects might be detected. Classification criteria are reported in Table 8. Here as well as elsewhere in this report, subgroup classifications were based upon empirical distributions for the present sample. When cell disproportionalities could not be avoided for trichotomous classifications, an attempt was made to reduce disproportionality between the "high" and "low" subgroupings.

Table 8

Independent Variable Classifications: Task Measures

Measure	Classification Criteria*		Cell Sizes		
	High	Low	High	Med.	Low
Preschool Inventory, age-corrected	≥ 3.643	< -4.683	122	118	123
Cooperation Rating, age-corrected	≥ .100	≤ -1.295	107	134	104
MFF, Age-corrected	≥ .128	≤ - .157	115	118	120
PPVT, Age-corrected	≥ 5.356	≤ -6.547	111	116	117
Sigel Latency	≥ .950	≤ .749	72	105	74
MFF Latency	≥ .650	≤ .549	127	125	101
PEFT Latency	≥ .950	≤ .749	100	135	93

*Subjects falling between the high and low cutting points were classified as "medium."

Measures of Family Background

A variety of family background measures were derived from an interview with the child's mother or mother-surrogate, conducted as part of the Longitudinal Study in 1969 (Shipman, 1972a). Maternal education was determined by the highest grade attended, as reported in the 1969 parent interview. For the larger longitudinal sample, the average number of grades completed was about eleven (Shipman, 1972b). While for the larger sample it was possible to trichotomize this variable, in the present reduced sample only a dichotomy proved feasible. Here, children from "high" SES backgrounds had mothers who completed 12 or more years of school (N=170),

whereas children from "low" SES backgrounds had mothers who completed 11 or fewer years of school (N=202).

Factor analyses of over 50 additional items or item groupings on the Year 1 sample revealed multiple common factors and considerable specific variance on many measures (Shipman, 1972a). In summary, a relatively large first factor was defined by physical and psychological resources within the home. This factor correlated .51 in extension with maternal education. A second factor, orthogonal to the first, related to the mother's participation and involvement in the community. A third factor included physical appearance of the home and children, the respondent's apparent understanding of the interview, and the respondent's overall cooperation during the interview. The fourth factor related to the mother's knowledge or willingness to respond to interview questions, particularly those dealing with education and adequacy of district schools. A fifth factor was defined by frequency of leaving the home to visit friends or for entertainment, and by frequency of the child accompanying the mother on various excursions. A sixth factor included the mother's desire to move, and to recommend to others that they move into the neighborhood. Factor seven included items concerning the mother's perception of her child's cognitive and personal-social competency. Factor eight was defined by frequency of parent-child interaction in the home. Promax rotations revealed that several of these factors were correlated (Shipman, 1972a).

Selection of interview measures for purposes of the present analysis represented a compromise between attempting to capture common variance through factor estimation and selecting variables on theoretical grounds. Irrespective of how much variance was shared with other measures in the

interview, a particular measure might be expected to bear directly on the child's cognitive skills and/or interpersonal adjustment, with possible generalization to the classroom context. More specifically, seventeen measures were selected using the following criteria: (1) The measure having the highest loading on each of the above eight factors was selected.(In the case of Factor 2 this measure was dropped because of high disproportionality of cells, but markers for Factor 2 were included on the basis of the other criteria.); (2) Several measures having high loadings on the first two principal components were added to the above; (3) Measures having theoretical interest were added irrespective of how much common variance they shared with the above.

Brief descriptions of these measures are provided in Table 9, which also indicates which principal component or rotated factor they mark, if any. More detailed descriptions of these measures, their precise scoring, their internal properties, and their structure, are given in Shipman, 1972a. Independent variable level classifications for each measure included in Table 9 are found in Appendix B-1, where it will be noted that trichotomous breakdowns were not always feasible.

Analyses

All independent variable breakdowns described above were used in separate ANOVAS on each of the fifteen ELI items. In all cases teacher ELI judgments on pupils were corrected for individual differences among teachers, according to the standardizing procedure described in the last section of Chapter 1. Thus, all analyses reported in this chapter deal with the impact of the independent variables upon pooled individual differences among pupils within teachers.

As noted earlier, the sum of the above fifteen ELI scores for each pupil constituted an index of the pupil's general receptivity to learning, irrespective of which technique the teacher might apply. This measure henceforth will be referred to as the child's "summary score."

Table 9

Family Background Measures from Maternal Interview

Item or Group	Factor	Measure Description
Gp. 10	First Principal Component	Family possessions
45	"	Expected educational attainment for child
199-204	"	Child possessions
Gp. 3	Second Principal Component	Positive attitudes toward school
86-99	Factor 1	Availability of child resources in community
Gp. 13	Factor 3	Quality of physical objects in home
SDK	Factor 4	Sum of "don't know" responses to interview
Gp. 12	Factor 5	Child accompanies parent into community
111	Factor 6	Would recommend friend move into community
17	Factor 7	Expects child to have school problems
38	Factor 8	Frequency mother reads to child
50		Severity of discipline for mild infraction
25-30	Factor 1	Mean age child expected to do certain things for self
119-124	Factor 2	Number of group memberships
183	Factor 2	Number of moves in last three years
195	Factor 1	Rooms/persons ratio in home
AA	Factor 5	Adult/child ratio in home

Results: Cognitive Task Measures

Findings for the Preschool Inventory, Child Cooperation Rating, Matching Familiar Figures Task (MFF errors) and the Peabody Picture Vocabulary Task, Form A (PPVT) are here considered as a group. Level mean differences and ANOVA summaries are given in Tables 10-13.

As seen in Table 10, the summary score was positively and quite strongly associated with the child's skills measured by the Preschool Inventory ($p<.001$). Items contributing significantly to this trend were:

7. Increase the difficulty or complexity of a learning task.

9. Instruct by explaining a task's requirements to the child verbally before or while the child does the task.

11. Give the child considerable freedom to choose and carry out learning tasks on his own.

12. Let the child learn directly from other children in the classroom.

14. Encourage the child to express his feelings, ideas, and/or skills.

15. Let the child discover his own mistakes.

Not surprisingly, teachers perceive that more cognitively skilled children are better able to cope with more difficult and/or complex learning tasks. More interesting, however, such children also are perceived as learning more effectively when given autonomy by the teacher, while autonomy-granting is perceived as quite ineffective with regard to those children who are less proficient cognitively. Since the Preschool Inventory taps a broad range of perceptual-motor, verbal, and quantitative skills, these findings provide clear evidence that the preschool teacher's beliefs about effective teaching style (autonomy-granting) are partially determined by the general information-processing performances of her pupils.

Table 10

Summary of Results for the Preschool Inventory

Dependent Variable	Group Means			ANOVA
	High	Med.	Low	F-Values
Summary Score	1.93	1.10	-2.58	15.50***
Item 1	- .01	- .01	.00	.00
Item 2	- .09	.01	.12	1.63
Item 3	.12	- .08	- .04	1.38
Item 4	- .17	.05	- .09	1.96
Item 5	.17	.30	- .33	15.80***
Item 6	.08	.10	- .08	1.20
Item 7	.33	.07	- .37	17.68***
Item 8	.12	.17	- .32	9.28***
Item 9	.24	.15	- .09	3.81*
Item 10	.04	.05	- .03	.33
Item 11	.31	.09	- .32	13.42***
Item 12	.22	.13	- .24	8.31***
Item 13	.08	- .01	- .15	1.99
Item 14	.24	.03	- .32	12.36***
Item 15	.26	.07	- .33	11.99***

*$p < .05$

**$p < .01$

***$p < .001$

Table 11

Summary of Results for Child Cooperation Rating

Dependent Variable	Group Means			ANOVA
	High	Med.	Low	F-Values
Summary Score	- .97	.77	1.20	3.25*
Item 1	.11	- .01	- .05	1.02
Item 2	.07	.05	- .02	.31
Item 3	.06	- .02	.04	.27
Item 4	- .07	- .05	- .02	.11
Item 5	- .21	.10	.26	7.06**
Item 6	- .03	- .01	.21	1.94
Item 7	- .19	.05	.09	2.84
Item 8	- .16	.16	.02	3.09*
Item 9	.07	.16	.16	.33
Item 10	.09	.02	.09	.32
Item 11	- .18	.09	.18	3.93*
Item 12	- .07	.05	.09	1.01
Item 13	- .09	.08	- .06	1.35
Item 14	- .18	.05	.07	2.55
Item 15	- .18	.05	.13	3.07*

*$p < .05$

**$p < .01$

Table 12

Summary of Results for MFF Errors

Dependent Variable	Group Means			ANOVA
	High	Med.	Low	F-Values
Summary Score	- .18	- .52	1.41	2.62
Item 1	.01	- .08	.02	.45
Item 2	.13	- .07	- .01	1.44
Item 3	- .02	- .12	.18	3.34*
Item 4	.06	- .09	- .16	2.11
Item 5	- .04	- .03	.23	3.07*
Item 6	.20	- .02	- .02	1.88
Item 7	- .20	- .03	.32	9.28***
Item 8	- .09	- .05	.11	1.37
Item 9	.12	.13	.06	.19
Item 10	.03	- .04	.11	1.11
Item 11	- .10	.12	.07	1.59
Item 12	- .13	.02	.14	2.42
Item 13	.06	- .19	.10	3.75*
Item 14	- .10	- .07	.12	1.96
Item 15	- .11	.00	.13	1.75

*$p < .05$

**$p < .01$

***$p < .001$

Table 13

Summary of Results for PPVT

Dependent Variable	Group Means			ANOVA
	High	Med.	Low	F-Values
Summary Score	.83	.88	-1.25	3.42*
Item 1	- .08	.12	- .03	1.46
Item 2	- .03	.11	.08	.77
Item 3	.12	- .07	- .05	1.35
Item 4	- .12	- .08	- .02	.34
Item 5	.12	.07	- .08	1.38
Item 6	- .04	.21	- .01	2.06
Item 7	.23	.07	- .30	9.55***
Item 8	.08	.00	- .17	1.89
Item 9	.07	.24	- .02	1.99
Item 10	.01	.10	.06	.33
Item 11	.20	.08	- .23	5.68**
Item 12	.10	.02	- .08	.95
Item 13	.07	- .03	- .09	.86
Item 14	.08	.02	- .18	2.32
Item 15	.03	.02	- .13	.93

* $p < .05$

** $p < .01$

*** $p < .001$

Relationships between the Preschool Inventory and Items 5 and 8 appear to be non-linear, but it is not clear that these findings warrant interpretations that assume non-monotonicity.

As seen in Tables 11 and 13, evidence on the Child Cooperation Measure and PPVT revealed essentially the same general picture, although less strongly. In the case of Child Cooperation, the relationship for the summary score was monotonic and significant ($p < .05$). (In Table 11, a "high" score on this measure signifies a low level of child cooperation.) In the case of the PPVT (Table 13), the result for the summary score is in the same direction ($p < .05$), although the "high" and "medium" subgroups do not appear to differ.

In the case of the MFF error scores, evidence for non-monotonic relationships is sufficiently strong to warrant a somewhat different interpretation. Children classified as "medium" (rather than as "high") on MFF errors (Table 12) were judged as least capable of learning by informing the child of a mistake (Item 3) and by expressing approval for the child's meeting the teacher's standards (Item 13). The common element in these techniques is use of evaluation as a mechanism of control. For reasons unknown, children of moderate competence on perceptual matching tasks may be perceived by teachers as especially vulnerable to a controlling teaching strategy.

In brief summary, these findings provide support for the validities of ELI judgments in that teachers' beliefs about effective modes of teaching were systematically influenced by individual differences in children's information-processing skills and motivation.

Results: Response Tempo Measures

Findings for Sigel Latency, Matching Familiar Figures (MFF) Latency,

and Preschool Embedded Figures (PEFT) Latency are here considered as a group. Level mean differences and ANOVA summaries are given in Tables 14-16.

For all three latency measures, the summary score was non-monotonically related to latency, significantly so in the case of the PEFT ($p < .05$, Table 16). Moreover, all significant item effects on all three measures appear to be non-monotonic, with teaching techniques judged to be most effective for children classified as "medium" in response latency to test tasks.

For all significant effects on the three latency measures, children classified as "medium" in latency were judged to be more easily taught than children judged as "low" in latency. If the "medium" latency children were identified as Reflective and the "low" latency children were identified as Impulsive, then these outcomes might become meaningful, since reflectivity generally has been found to be positively associated with cognitive proficiency (Kagan, 1965; Kagan & Kogan, 1970; Ward, 1968). However, there was also rather consistent evidence on the Sigel Task and on the PEFT that children having the longest latencies also were judged to be the most difficult to teach. Such evidence suggests that when latencies in response to task demands exceed some threshold, a process other than Reflection-Impulsivity is being tapped, one that apparently interferes with the child's classroom learning. It has been suggested that such a process might be fear of failure or evaluation-anxiety (Kagan & Kogan, 1970; Messer, 1970). In the present case, children who hesitated to respond in the test situation (perhaps out of fear of failure) may have exhibited similar behaviors in the classroom. A possible clue here is found in Item 14, which elicited the non-monotonic effect for two of the three latency measures

Table 14

Summary of Results for Sigel Latency

Dependent Variable	Group Means			ANOVA
	High	Med.	Low	F-Values
Summary Score	- .42	1.70	- .13	2.52
Item 1	- .16	.05	- .06	1.02
Item 2	- .02	.01	.06	.15
Item 3	.05	.10	- .03	.41
Item 4	- .04	- .05	- .11	.16
Item 5	.00	.23	.12	1.26
Item 6	.12	- .07	.08	.82
Item 7	- .13	.23	.01	3.12*
Item 8	.05	.06	- .13	.99
Item 9	.06	.20	.11	.52
Item 10	- .01	.00	- .02	.01
Item 11	- .02	.31	.00	3.76*
Item 12	- .01	.16	- .06	1.34
Item 13	- .15	.13	- .10	2.71
Item 14	- .20	.23	- .07	5.69**
Item 15	.04	.13	.08	.20

*$p < .05$

**$p < .01$

Table 15

Summary of Results for MFF Latency

Dependent Variable	Group Means			ANOVA
	High	Med.	Low	F-Values
Summary Score	.07	.94	- .38	1.06
Item 1	.00	- .03	- .02	.05
Item 2	- .05	.08	.01	.57
Item 3	.10	- .04	- .02	.90
Item 4	- .13	- .01	- .04	.71
Item 5	- .03	.11	.08	.71
Item 6	.03	.08	.05	.08
Item 7	.08	.07	- .07	.76
Item 8	.00	.06	- .09	.67
Item 9	.17	.14	- .02	1.32
Item 10	- .05	.18	- .05	3.17*
Item 11	- .11	.17	.04	2.46
Item 12	.02	.06	- .06	.47
Item 13	.00	.07	- .11	1.16
Item 14	.00	.01	- .07	.22
Item 15	.03	.00	- .01	.06

*$p < .05$

Table 16

Summary of Results for PEFT Latency

Dependent Variable	Group Means			ANOVA
	High	Med.	Low	F-Values
Summary Score	-1.05	1.39	.67	3.86*
Item 1	- .11	.09	.11	1.84
Item 2	.06	.02	.05	.05
Item 3	- .15	.10	.10	2.39
Item 4	- .17	- .05	.09	2.16
Item 5	- .06	.21	.03	2.43
Item 6	- .06	.21	- .04	2.51
Item 7	- .06	.15	- .02	1.66
Item 8	- .22	.17	- .06	4.54*
Item 9	.01	.10	.23	1.20
Item 10	- .05	.04	.11	.88
Item 11	- .09	.11	.11	1.32
Item 12	- .01	.06	.05	.18
Item 13	- .07	.00	.00	.25
Item 14	- .13	.15	- .12	3.34*
Item 15	.04	.03	.03	.01

*$p < .05$

(Tables 14 and 16), but which did not exhibit consistent effects across the cognitive skill measures (Tables 10-13). The content of Item 14 is, "Encourage the child to express his feelings, ideas, and/or skills." Does this outcome imply that the longer latency child is resistant to expressing himself because of fear of negative evaluation by others? Perhaps future analyses of measures available on these children's personal-social behaviors in the classroom (Emmerich, 1971) will shed further light on this question.

As noted earlier, measures of cognitive skill and response tempo were found to define distinct orthogonal factors in the larger Longitudinal Study. This state-of-affairs existed in this sample both prior to school entry (Shipman, 1971) and toward the end of the preschool year (Shipman, 1972b). Because previous evidence on this relationship in older and more economically advantaged children indicates that a slow response latency on matching familiar figures tasks is moderately associated with proficiency on this task, failure to find this relationship in the first two years of the Longitudinal Study was of considerable theoretical interest. It was speculated that a temperamental component in response tempo had not yet become integrated with the child's approach to information-processing at this young age in this subpopulation. The present study's findings both support and sharpen this interpretation. For those children whose response latencies tend to be moderate-to-fast, a Reflection-Impulsivity dimension does seem to be operative, at least as revealed by teachers' judgments on pupils' ease of learning in the classroom. However, for those children whose response tempos were beyond this range, a slow response latency was associated with somewhat greater learning difficulties, revealing "lack of

integration." But the above interpretation concerning evaluation anxiety in these children suggests that such lack of integration is not simply a "deficit," but rather is mediated by an inhibiting process. Of course, these data alone cannot tell us whether this inhibiting process is becoming increasingly crystallized during this period, resulting in individual differences that are stable in the long run. An equally plausible hypothesis is that this inhibiting process is short-term and age-specific, since the research literature suggests that response latency and errors become linearly related at later age periods.

Cognitive skill and response tempo might be expected to interact as influences upon teacher ELI judgments. Consequently, MFF error score (3) x MFF latency score (3) ANOVAS were run on the summary score and on each of the 15 items. None of the interactions approached statistical significance, suggesting that the above "fear of failure" interpretation applies to our slowest tempo subjects irrespective of their cognitive skill levels.

In summary, children's latency scores on three cognitive tasks were found to have non-monotonic relationships with teacher ELI judgments, contrasting with the predominantly monotonic relationships found for cognitive skills. While teachers tended to judge children of moderate response tempo as generally easier to teach than children of fast response tempo, those children who exhibited the longest latencies were in some respects considered the most difficult to teach, suggesting that some process, perhaps evaluation anxiety, reduces the effectiveness of the teacher's efforts to engage these children in the learning process. Whether the latter inhibiting process is a stable or transient characteristic of these children remains a question for future studies. Moreover, the

precise nature of this inhibiting process cannot be determined from the present data alone.

Results: Child Sex and Age

Table 17 presents findings for the Sex (2) x Age (2) ANOVAS. Children classified as "Young" were 52 months of age or younger at the approximate time they entered a preschool program (September 1, 1969), while those classified as "Old" were 53 months of age or older at the time of preschool entry. Rounded median ages of the two groups were 49 and 55 months, respectively. Subgroups consisted of 157 Young Boys, 139 Old Boys, 141 Young Girls, and 125 Old Girls.

Girls received higher summary scores than boys (Sex Main Effect, $p < .05$), especially among the older children (Sex x Age Interaction, $p < .05$). The following items exhibited significant sex-difference Main Effects:

3. Inform the child when he makes a mistake.

7. Increase the difficulty or complexity of a learning task.

11. Give the child considerable freedom to choose and carry out learning tasks on his own.

Teachers apparently perceived girls as generally more actively engaged in those classroom activities which teachers traditionally identify as "learning." The validity of their perceptions in this regard is supported by independent measures of Longitudinal Study children's personal-social behaviors during preschool free-play periods (Emmerich, 1971). Findings from that phase of the larger study indicated that girls more than boys exhibited autonomous achievement, cognitive and artistic activity, whereas boys more than girls exhibited interactions with peers, gross motor activity, and fantasy behavior ("make believe"). The extent to which these outcomes can be

Table 17

Summary of Sex x Age Results

Dependent Variable	Subgroup Means								ANOVA F-Values		
	Young Boys	Old Boys	Young Girls	Old Girls	Boys	Girls	Young	Old	Sex(S)	Age(A)	S x A
Summary Score	-.07	-.54	.24	2.37	-.30	1.30	.09	.92	6.20*	1.54	4.44*
Item 1	.12	-.04	.10	.01	.04	.06	.11	-.02	.03	3.20	.19
Item 2	.06	-.11	.20	.04	-.03	.12	.13	-.04	3.43	4.65*	.00
Item 3	-.08	-.05	.02	.25	-.07	.14	-.03	.10	5.90*	2.14	1.62
Item 4	-.04	-.04	-.02	.17	-.04	.08	-.03	.07	2.22	1.74	1.90
Item 5	-.06	.01	-.11	.33	-.03	.11	-.09	.17	2.04	8.53**	4.87*
Item 6	.05	-.08	.06	.12	-.02	.09	.06	.02	1.34	.26	1.25
Item 7	-.10	.02	-.02	.29	-.04	.13	-.06	.16	4.21*	6.80**	1.40
Item 8	.10	-.08	-.05	.09	.01	.02	.02	.01	.00	.11	3.45
Item 9	.10	-.03	.04	.14	.04	.09	.07	.06	.28	.04	1.81
Item 10	.05	.02	.06	-.01	.03	.02	.05	.01	.01	.45	.07
Item 11	-.13	.00	.00	.28	-.07	.14	-.07	.14	5.65*	6.12*	.72
Item 12	-.09	-.04	.02	.15	-.06	.08	-.04	.06	3.19	1.27	.30
Item 13	-.08	-.02	.08	.10	-.05	.09	.00	.04	3.38	.30	.07
Item 14	.00	-.07	.00	.16	-.03	.08	.00	.05	1.80	.29	2.34
Item 15	.02	-.04	-.13	.26	-.01	.07	-.06	.11	.62	3.16	7.09**

*$p < .05$

**$p < .01$

generalized beyond an economically disadvantaged and predominantly black subpopulation remains unclear, however (Emmerich, 1971).

The Sex x Age Interaction for the summary score is consistent with assumptions that (a) young children tend to assimilate traditional classroom learning contents and processes to a feminine role stereotype (Kagan, 1964), and that (b) stereotyped sex typing increases with age during the preschool period. The latter assumption received independent support from the measures of masculinity-femininity based upon children's personal-social behavio·s in the classroom (Emmerich, 1971).

The Sex x Age Effect was especially striking for the following items:

5. Instruct a group of children simultaneously, with the child as one member of this group.

15. Let the child discover his own mistakes.

It is not obvious why these particular ELI items more than the others should reflect the postulated growth of sterotyped sex typing with age. There is some hint from the content of these items that teachers perceive "feminine" behavior in girls as a sign that they are better able to exert control over their own behavior. In support of this tentative inference, independent observers of children's classroom behaviors considered girls' cooperative behaviors to be a primary definer of their "femininity" (Emmerich, 1971).

Not surprisingly, the following items exhibited significant Age Main Effects:

7. Increase the difficulty or complexity of a learning task.

11. Give the child considerable freedom to choose and carry out learning tasks on his own.

Moreover, the technique of giving individual instruction (Item 2) was perceived as more effective (or necessary) in younger than in older children. Since these results are all consistent with the notion that older children are better able to deal autonomously with the more challenging features of the classroom environment, they provide additional support for the content validities of the ELI judgments.

In summary, these findings generally were consistent with views that older children within the preschool classroom are more mature learners than younger children, that girls at this age exhibit greater receptivity to classroom learning as defined by teachers, that during early childhood behaviors stereotyped as "feminine" are more facilitating of classroom learning than behaviors stereotyped as "masculine," and that sex typing increases with age during this period. However, the above conclusions on sex typing remain especially tentative since they extrapolate beyond the present findings.

Results: Family Background Characteristics

Results for SES differences (indexed by maternal education) are given in Table 18. Not surprisingly, pupils whose mothers had completed more years of school received higher summary scores than pupils whose mothers had completed fewer years of school ($p < .05$). This contrast was most apparent for the following ELI items:

5. Instruct a group of children simultaneously, with the child as one member of this group.

7. Increase the difficulty or complexity of a learning task.

11. Give the child considerable freedom to choose and carry out learning tasks on his own.

12. Let the child learn directly from other children in the classroom.

14. Encourage the child to express his feelings, ideas, and/or skills.

Table 18

Summary of Maternal Education Results

Dependent Variable	Subgroup Means		F-Values
	High	Low	
Summary Score	.93	- .83	5.84*
Item 1	.04	.00	.19
Item 2	.04	.04	.00
Item 3	.04	- .05	.86
Item 4	- .02	- .09	.63
Item 5	.13	- .09	4.65*
Item 6	.00	.02	.06
Item 7	.14	- .15	7.84**
Item 8	.05	- .09	1.92
Item 9	.07	.05	.03
Item 10	.03	.06	.12
Item 11	.11	- .11	4.59*
Item 12	.15	- .15	9.11**
Item 13	.02	- .09	1.35
Item 14	.11	- .13	5.94*
Item 15	.03	- .05	.62

*$p < .05$

**$p < .01$

These findings are very similar to those reported earlier in relation to independent variable classifications based upon measures of the child's cognitive skills prior to preschool entry, and are consistent with the known positive relationship between maternal education and children's cognitive performances in the larger study (Shipman, 1972b).

Analyses of relationships between the seventeen maternal interview measures and teacher ELI judgments revealed few findings. Indeed, the total number of significant effects ($p < .05$) is about that number expected on the basis of chance for multiple independent tests. Summaries of ANOVAS and subgroup means for all 17 maternal interview variables are found in Appendix B-2.

It is worth noting the outcomes for two of these maternal interview measures, however, since a relatively high proportion of the significant findings reported in Appendix B-2 occurred on them. One of these measures dealt with severity of the mother's reported reactions to her child's minor infractions of social norms (Interview Item 50). Mothers reporting that they responded more severely (severe physical punishment, light spanking, revocation of privileges, verbal scolding or shaming) had children whom teachers perceived generally (summary score) as less receptive to teaching efforts than children whose mothers responded less severely (mild verbal reprimand, distracting the child or substituting another activity, ignoring the infraction). This contrast was strongest for the following items:

7. Increase the difficulty or complexity of a learning task.

11. Give the child considerable freedom to choose and carry out learning tasks on his own.

15. Let the child discover his own mistakes.

These outcomes are of considerable social as well as theoretical interest.

They indicate that the mother's handling of discipline problems is related to the teacher's perception of the child's learning competence in the classroom, especially when the teacher grants autonomy to the child. In this regard it is important to note that this relationship is not "carried" by the usual SES indicators, since this measure was not loaded on the first maternal interview factor (Shipman, 1972a). Perhaps parents who utilize severe disciplinary techniques in response to minor child infractions inhibit the child's tendencies to explore his environment and to become actively engaged in the learning process on an autonomous basis. Alternatively, it is possible that children who more frequently violate parental norms (and thereby elicit severe parental discipline) also violate social norms within the classroom and therefore are perceived by teachers as difficult to teach.

The other maternal interview measure having more than negligible impact upon ELI judgments was the ratio of adults to children in the home (Maternal Interview AA Measure). A high ratio was significantly associated with greater judged efficacy for the following techniques:

7. Increase the difficulty or complexity of a learning task.
8. Express displeasure or criticism when the child's behavior does not meet your standards.
9. Instruct by explaining a task's requirements to the child verbally before or while the child does the task.

It is not clear what common process might underly this set of items. Perhaps children from households with low adult densities are less attentive or responsive to the expectations of adults, especially when these are communicated through negative evaluations. In this regard it is of interest that children from homes having <u>low</u> adult densities were reported by teachers to

be especially responsive to adult expressions of approval (Item 13). The latter outcome together with that for Item 8 are consistent with the view that children who receive low levels of positive social reinforcement from adults (attention and support) are especially likely to become motivated to learn when greater social reinforcement is provided (Zigler & Harter, 1969; Zigler & Balla, 1972).

Without denying the importance of the above findings, perhaps the most striking feature of the outcomes on family background is their weak impact upon teachers' ELI judgments compared to the impact of child status (sex and age) and behavioral characteristics (cognitive skills and style). Even in the case of maternal education, which had the clearest impact among the family background measures, most of the relationships with teacher judgments probably were mediated by the child's cognitive performances upon entry into preschool. This state-of-affairs thus confirms our initial expectation that proximal behavior characteristics in the child impinging directly on the teacher are better predictors of teachers' beliefs about effective teaching styles than are more distal child background characteristics.

Chapter 4

Teacher ELI Measures and Their Relationships to Pupil Cognitive Skills and Style

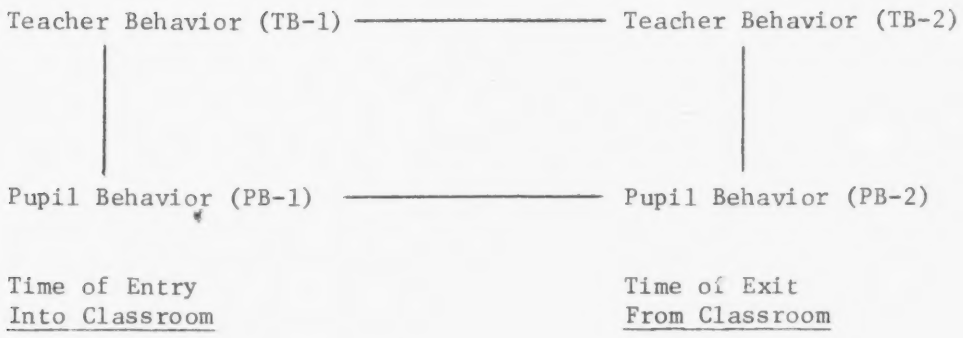
Introduction

Chapter 3 dealt with the impact of individual differences among children (within classrooms) upon teacher judgments. The present chapter considers teachers as the unit of analysis, and asks whether individual differences among teachers on ELI measures are associated with classroom (average) variations in pupils' cognitive skills and style both prior to preschool entry and toward the end of the preschool year.

Chapters 1 and 2 provided rationales and evidence on the internal properties of the following teacher ELI measures: (1) total score; (2) C score; (3) CxR score; (4) A vs. C Subgroups; (5) B vs. D Subgroups. (For the reason discussed in Chapter 2, the R score is not considered here.) In the present chapter, these measures serve as independent variables. The dependent variables are the seven cognitive skill and style measures used in Chapter 3. Also considered here are these same cognitive skill and style measures taken a year later toward the end of the preschool year (Year 2). Factor analyses of these measures in Year 2 revealed that they tapped similar constructs in Years 1 and 2 (Shipman, 1972b).

Conceptual Framework

The teacher-pupil relationship can be viewed as a two-way process involving mutual influences. The problem is to discern the nature and direction of these influences. The following diagram schematizes some of these relationships:



The line connecting PB-1 and TB-1 could represent any one of three types of influence: (1) Through some selective process, whether deliberate or inadvertent, teachers having certain characteristics are assigned to classrooms having pupils with certain characteristics; (2) Initial teacher behaviors influence initial pupil characteristics; (3) Initial pupil behaviors influence initial teacher characteristics. In the present study (2) is pretty well ruled out since measurement of children's cognitive skills and styles in Year 1 occurred prior to the children's entry into preschool settings.

Evidence on the stability of teacher behavior is inconclusive (Rosenshine, 1970), and the present study provides no data on this question for the teacher ELI measures. In the present analysis if a PB-1--TB-1 effect is absent, it will be assumed that the ELI measure represents a teacher characteristic that is reasonably stable on a long-term basis. However, if a PB-1--TB-1 effect is found, then it will be assumed that the teacher ELI measure is stable only on a short-term basis; i.e., after the pupil cohort characteristic has had its major impact upon the teacher ELI characteristic, presumably early in the school year.

The PB-1--PB-2 relationship refers to the stability of a pupil behavioral characteristic during the school year, which can be estimated empirically in the present study.

Finally, the TB-2--PB-2 relationship could be characterized in one of the following ways: (1) Through some prior selective process operative throughout the school year, teachers having certain characteristics are associated with pupils having certain characteristics; (2) A teacher characteristic that is stable throughout the school year has an impact upon the pupils; (3) A pupil characteristic that is stable during the year has an impact upon the teacher.

In the present study, PB-1 and PB-2 measurements are available, but since teacher ELI measures were taken only in the spring of the school year, TB-1 measures are missing. However, relationships between pupil cognitive skills and style prior to school entry (PB-1) and teacher ELI judgments (TB-2) were determined empirically. (This relationship would be represented by a diagonal in the above scheme.) Since it is assumed that the TB-1 x TB-2 correlation is high the missing PB-1 x TB-1 relationship can be estimated from the PB-1 x TB-2 relationship. Such an assumption makes it possible to carry out analyses of mutual influences depicted in the above scheme.

This model will be applied to the findings of this chapter in order to provide a systematic framework for interpretation. Since several untested assumptions are involved, interpretations that follow are to be considered more tentative than those presented in Chapter 3.

Analysis Designs

Age-corrected scores were computed for the four cognitive task measures in Year 2 using the same procedure applied to these measures in Year 1 (Chapter 2). This procedure corrected Year 2 scores to a mean age of 59 months. All subsequent analyses using these four scores in either year are based upon these age-corrections.

It was important that ANOVA classifications take account of the built-in association between the teacher's total score and her C and CxR individuation scores (Chapter 2). The 35 teachers were first classified as high, medium, and low on the total score. The 25 teachers classified as non-high on the total score were then cross-classified as high, medium, and low on both the C and CxR individuation measures.

In the first ANOVA design, teachers classified as high on total score ($N = 10$) were compared with teachers who were not high on total score and also not high on both C and CxR ($N = 9$). This comparison of two total score levels thus held teacher individuation constant at low levels.

The above teachers who were not high on the total score and who also were low on both C and CxR ($N = 9$) were classified as "non-individuators." A second classification included teachers not high on total score, high on C, and not high on CxR ($N = 7$). These teachers are called "global individuators" because of their tendency to believe that certain pupils are more capable of classroom learning than others, irrespective of which teaching technique is applied. A third classification included teachers not high on total score, not high on C, and high on CxR ($N = 6$). These teachers are referred to as "differentiated individuators" because

of their tendency to believe that different profiles of teaching techniques are best suited for different pupils. A three-level ANOVA design which included these subgroups compared types of individuation (low vs. global vs. differentiated) while holding total score constant at non-high levels.

The ANOVAS comparing the A x C and B x D subgroups were based upon the classifications given in Chapter 2.

Application of the Model: Analyses

A first question posed by the model is whether teachers differing on some ELI characteristic have pupils who differ in cognitive skills and/or style prior to school entry. This is estimated by ANOVAS in which pupil cognitive skill and style measures taken in Year 1 are the dependent variables. Summaries of these findings are given in Table 19.

When one of the above effects proves to be significant, the question remains whether it is due to some selective process which tends to match teachers having certain characteristics with pupils having certain characteristics, or whether pupil behaviors initially have a direct impact upon the teacher's beliefs about her pupils in a particular year. The findings of Chapter 3 give the latter interpretation considerable plausibility. In addition, it was possible to provide at least an indirect test of these interpretations. If some process of deliberate or inadvertent matching of teachers with student cohorts were operative, one might expect the SES background of pupils to be a factor in such matching. Either self-selection on the part of the teacher or assignment by supervisors might utilize cues on a classroom's typical SES level (e.g., characteristics of the neighborhood, Head Start economic eligibility) as a

Table 19

Summary of Results for Year 1 Pupil Measures

Independent Variable	Dependent Variable	Group Means High	Group Means Low	ANOVA F-Values	Cell Size High	Cell Size Low
Total Score	Preschool Inventory[a]	1.13	1.05	.00	114	92
	Cooperation Rating[a]	.13	.02	.17	111	83
	MFF Errors[a]	.01	.00	.05	112	90
	PPVT[a]	.14	1.82	.93	105	89
	Sigel Latency	.85	.91	2.89	80	70
	MFF Latency	.61	.62	.17	112	90
	PEFT Latency	.84	.85	.01	104	83

Individuation Type		Low	Hi C x R	Hi C		Low	Hi C x R	Hi C
	Preschool Inventory[a]	1.05	-.66	-2.90	2.43	92	57	52
	Cooperation Rating[a]	.02	-.07	- .25	.26	83	51	50
	MFF Errors[a]	.00	-.01	- .02	.11	90	56	48
	PPVT[a]	1.82	-.59	-4.10	4.21*	89	54	52
	Sigel Latency	.91	.78	.82	4.82**	70	39	31
	MFF Latency	.62	.59	.62	.67	90	56	48
	PEFT Latency	.85	.85	.86	.04	83	53	42

(Table continued on following page)

[a]Age-corrected scores

Table 19 (Cont'd)

Summary of Results for Year 1 Pupil Measures

Independent Variable	Dependent Variable	Group Means A	Group Means C	ANOVA F-Values	Cell Size A	Cell Size C
A x C Subgroups	Preschool Inventory[a]	4.32	-2.16	6.72*	27	46
	Cooperation Rating[a]	- .31	.22	1.56	26	45
	MFF Errors[a]	- .12	.08	6.96*	27	44
	PPVT[a]	7.96	-4.76	18.35***	25	45
	Sigel Latency	.96	.81	6.26*	18	37
	MFF Latency	.64	.60	2.14	27	44
	PEFT Latency	.84	.83	.04	24	38
B x D Subgroups		B	D		B	D
	Preschool Inventory[a]	- .70	-2.12	.18	13	25
	Cooperation Rating[a]	.28	- .20	.41	14	23
	MFF Errors[a]	.15	- .03	3.90	12	23
	PPVT[a]	.97	.51	.01	11	25
	Sigel Latency	.88	.81	1.10	10	17
	MFF Latency	.67	.61	1.26	12	23
	PEFT Latency	.82	.89	1.03	14	21

*$p < .05$

**$p < .01$

***$p < .001$

[a]Age-corrected scores

basis for teacher assignment. If such a process were operative, then we would expect ELI-measure classifications yielding pupil differences in cognitive skill at the beginning of the school year also to differ on SES. Also, we would expect in these cases that the SES difference would hold even after child cognitive level prior to school entry is partialled out, since the first interpretation assumes that it is SES, not pupil cognitive proficiency impinging upon the teacher, that is the mediating factor. In order to evaluate these possibilities, analyses of variance and covariance were run with teacher ELI classifications as independent variables, pupil cognitive skill measures in Year 1 serving as covariates, and maternal education serving as the dependent variable. (The Cooperation Rating Measure was excluded as a covariate for the reason noted below.) Summaries of these analyses are presented in Table 20.

A third question concerns Year 1 x 2 stabilities on the pupil measures. These stability estimates are presented in Table 21, revealing that cognitive skills were more stable than response tempo, as found for the larger longitudinal sample (Shipman, 1972b).

A fourth question is whether teachers differing on an ELI characteristic have pupils who differ in cognitive skills and/or style toward the end of the school year. This was determined by ANOVAS in which pupil measures taken in Year 2 were the dependent variables. Summaries of these findings are given in Table 22.

Interpretations of Findings

Two negative outcomes are immediately apparent upon inspection of Tables 19 and 22. The first is that the teacher's total score on ELI

Table 20

Summary of Results for Maternal Education

Independent Variable	Covariate[a]	Group Means[b] High		Low	F-Value ANOVA	ANCOVA
Total Score	None	10.7		10.7	.01	
	Preschool Inventory	10.7		10.8		.06
	MFF Errors	10.8		10.8		.00
	PPVT	10.9		10.7		.46
Individuation		Low	HiCxR	Hi C		
Type	None	10.7	11.3	10.3	2.76	
	Preschool Inventory	10.8	11.3	10.6		1.31
	MFF Errors	10.8	11.3	10.7		1.19
	PPVT	10.7	11.2	10.7		.98
A x C		A		C		
Subgroups	None	11.0		9.9	3.67	
	Preschool Inventory	11.0		10.0		.86
	MFF Errors	11.0		10.0		1.37
	PPVT	11.0		10.1		.00
B x D		B		D		
Subgroups	None	9.1		10.8	7.26*	
	Preschool Inventory	8.9		11.1		9.18**
	MFF Errors	9.0		11.3		16.13***
	PPVT	9.1		11.2		9.24**

*$p < .05$

**$p < .01$

***$p < .001$

[a]All covariates are Year 1 age-corrected scores.

[b]Adjusted for covariate when applicable.

Table 21

Year 1 x ? Stability Correlations

Measure	r	N
Preschool Inventory[a]	.63	334
Cooperation Rating[a]	.33	292
MFF Errors[a]	.33	323
PPVT[a]	.66	317
Sigel Latency	.03	218
MFF Latency	.22	323
PEFT Latency	.14	289

[a]Age-corrected within each year.

is unrelated to pupil measures, indicating that this measure taps an attribute of the teacher that has little bearing upon these teacher-pupil relationships. This general outcome strengthens the suspicion that the ELI total score measures a response set elicited by some aspect of the ELI format. An alternative possibility that can be explored in future studies is that the total score does tap a meaningful aspect of the teaching role, but one that does not bear upon teacher-pupil relationships until later grades.

The second negative outcome bears on the Child Cooperation Rating, which yielded no significant findings in the ANOVAS summarized in Tables 19 and 22. Since this particular measure is least closely linked either conceptually or empirically to the measures of cognitive skill

Table 22

Summary of Results for Year 2 Pupil Measures

Independent Variable	Dependent Variable	Group Means High	Group Means Low	ANOVA F-Values	Cell Size High	Cell Size Low
Total Score	Preschool Inventory[a]	3.01	1.83	.84	116	94
	Cooperation Rating[a]	.15	- .10	.88	102	93
	MFF Errors[a]	- .04	- .05	.20	117	93
	PPVT[a]	1.63	2.74	1.23	115	95
	Sigel Latency	.76	.73	1.10	107	86
	MFF Latency	.60	.61	.16	117	93
	PEFT Latency	.71	.73	.47	104	89
Individuation Type		Low	HiCxR / Hi C		Low	HiCxR / Hi C
	Preschool Inventory[a]	1.83	1.61 / -5.03	8.29***	94	58 / 51
	Cooperation Rating[a]	- .10	.02 / - .30	.52	93	53 / 47
	MFF Errors[a]	- .05	- .02 / .02	1.95	93	57 / 51
	PPVT[a]	2.74	1.11 / -2.12	7.52***	95	58 / 51
	Sigel Latency	.73	.76 / .84	6.20**	86	54 / 42
	MFF Latency	.61	.59 / .63	1.98	93	57 / 51
	PEFT Latency	.73	.75 / .77	1.13	89	56 / 52

(Table continued on following page)

[a]Age-corrected scores

Table 22 (Cont'd)

Summary of Results for Year 2 Pupil Measures

Independent Variable	Dependent Variable	Group Means A	Group Means C	ANOVA F-Values	Cell Size A	Cell Size C
A x C Subgroups	Preschool Inventory[a]	3.66	- .58	4.49*	28	46
	Cooperation Rating[a]	- .21	.46	2.25	28	41
	MFF Errors[a]	- .09	.01	4.11*	28	46
	PPVT[a]	5.25	-1.18	15.27***	28	46
	Sigel Latency	.79	.77	.13	25	42
	MFF Latency	.62	.60	.54	28	46
	PEFT Latency	.77	.77	.00	27	40
B x D Subgroups		B	D		B	D
	Preschool Inventory[a]	-4.99	1.90	4.47*	16	25
	Cooperation Rating[a]	- .20	- .32	.07	15	24
	MFF Errors[a]	.16	- .06	5.83*	15	25
	PPVT[a]	-2.51	1.16	2.02	15	25
	Sigel Latency	.86	.84	.17	13	24
	MFF Latency	.58	.64	3.45	15	25
	PEFT Latency	.74	.76	.05	13	25

*$p < .05$

**$p < .01$

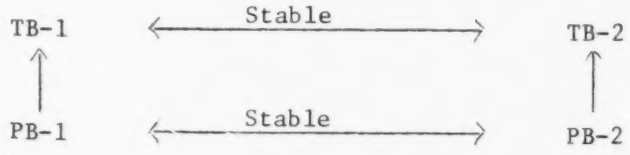
***$p < .001$

[a]Age-corrected scores

(Table 7) (Shipman, 1971, 1972b), it is not altogether surprising that it would share few common effects with the other task measures.

In fitting the positive findings to the model, certain guidelines will be followed. First, while there were findings of borderline significance, only those reaching the .05 level will be interpreted. Secondly, it will be assumed that all cognitive-skill measures are moderately stable pupil characteristics between Years 1 and 2, whereas the response tempo measures generally will be considered unstable between these two periods. (Both of these assumptions seem justified by the stability coefficients reported in Table 21.) It will also be recalled that a significant PB-1 x TB-2 relationship will be presumed to reflect a PB-1 x TB-1 relationship, and that the TB-1 x TB-2 relationship is assumed to be stable in all cases.

Consider the situation depicted by the following diagram, in which arrows indicate the direction of influence. (Non-directional arrows are used to depict stability assumptions.)



In this situation the critical factor is that the child's initial behavior upon entry into preschool influences the teacher's ELI response. In fact, this situation best describes the most frequent outcomes reported in Tables 19, 20 and 22. There were four instances in which this model fit, as illustrated in Figures 1-4. In all four instances, analyses of covariance reveal that SES did not differ among independent-

variable subgroups (Table 20). It is for this reason that the direction of influence is here attributed to be from PB-1 to TB-1.

The findings depicted in Figure 1 have interesting implications for the concept of teacher individuation. It is apparently the least capable pupil cohort with regard to verbal knowledge (PPVT) which elicits the teacher belief that students are differentially receptive to learning irrespective of teaching technique (High C group). The most capable cohort on the PPVT elicits the least individuation, and the middle cohort elicits the greatest amount of differentiated individuation (High CxR group). Perhaps the most clearcut feature of this pattern is the linkage of a global form of individuation (High C) with classrooms in which children are relatively retarded in verbal skills. A second feature is that a low individuation stance on the part of the teacher seems to be a response to the relatively advanced verbal status of her pupils. Of course, the nature of this particular model does not allow for any conclusions regarding the impact of the teacher's response (TB-1) upon her pupils' subsequent cognitive growth (PB-2) (Elashoff, 1969).

Figures 2-4 depict a similar state-of-affairs for three measures of cognitive skill with regard to profile subgroup A vs. C. It will be recalled that while both A and C employ a common core of instructional techniques, A grants the child considerable autonomy in structuring his classroom activities without utilizing either positive or negative feedback as a mechanism of control, whereas C utilizes the latter for controlling purposes without granting the child autonomy. It is again reasonably clear that these differences in teaching style are a response to the average cognitive level of the teacher's pupils upon entry into her classroom.

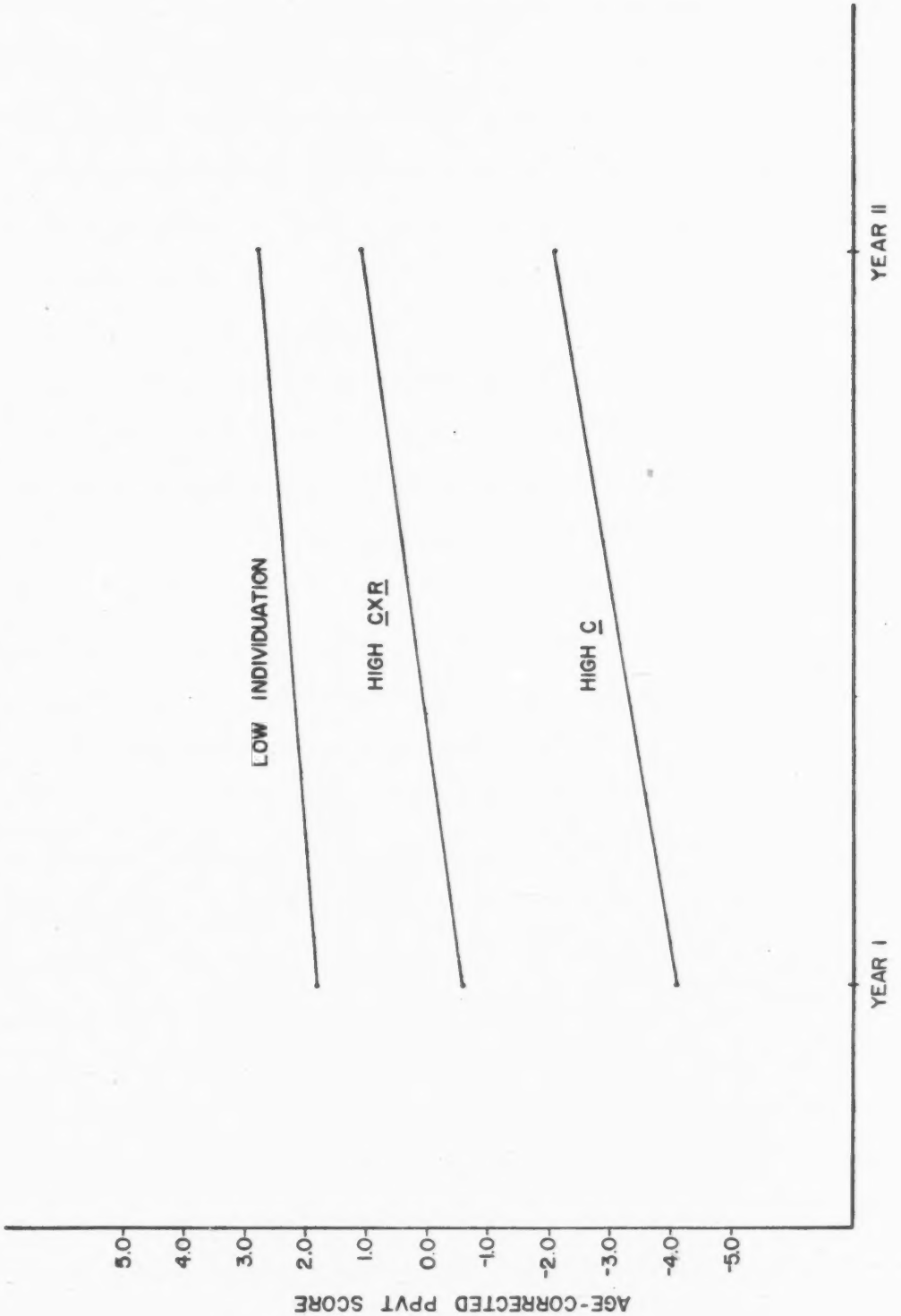


Fig. 1.--Individuation Subgroup Differences on the PPVT

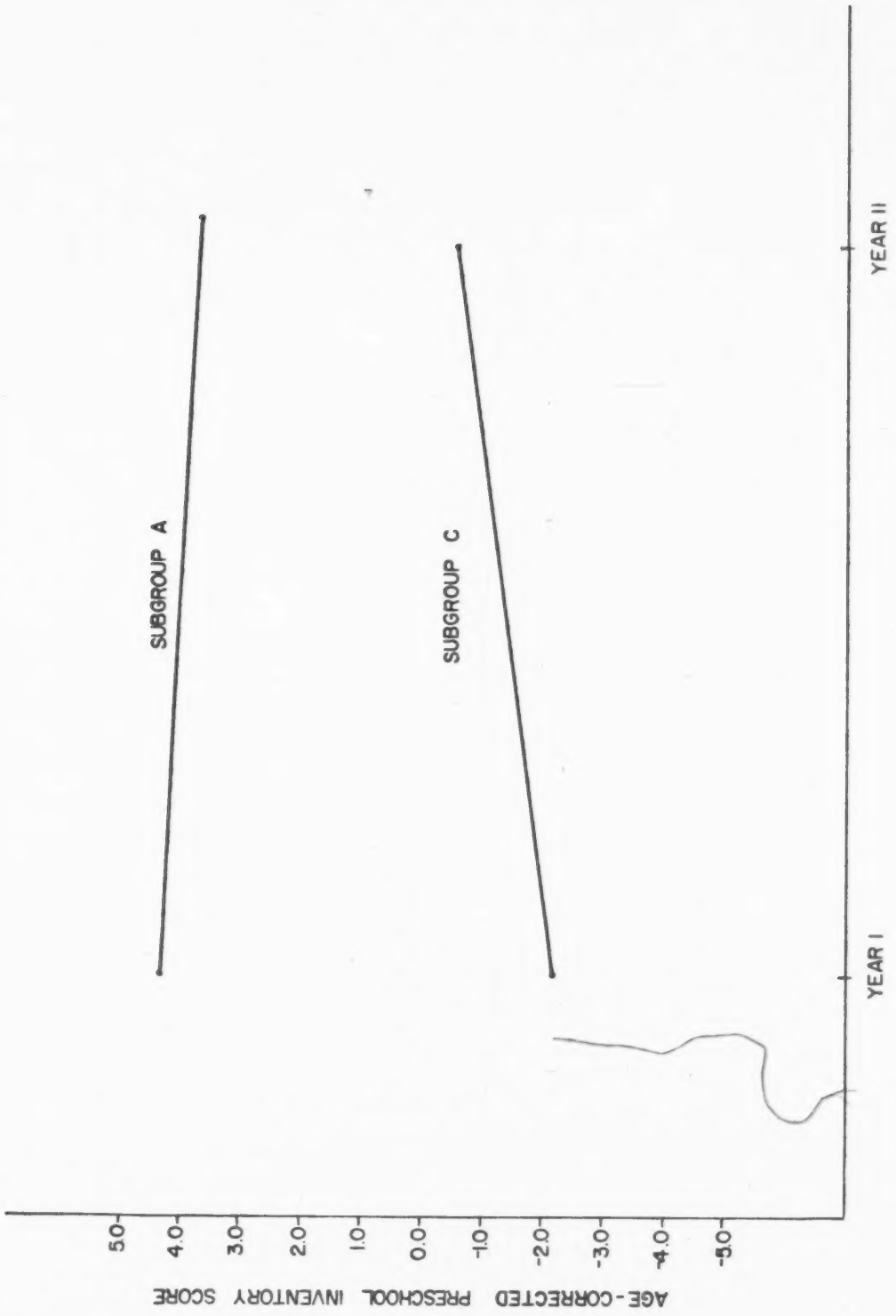


Fig. 2.--A x C Subgroup Differences on the Preschool Inventory

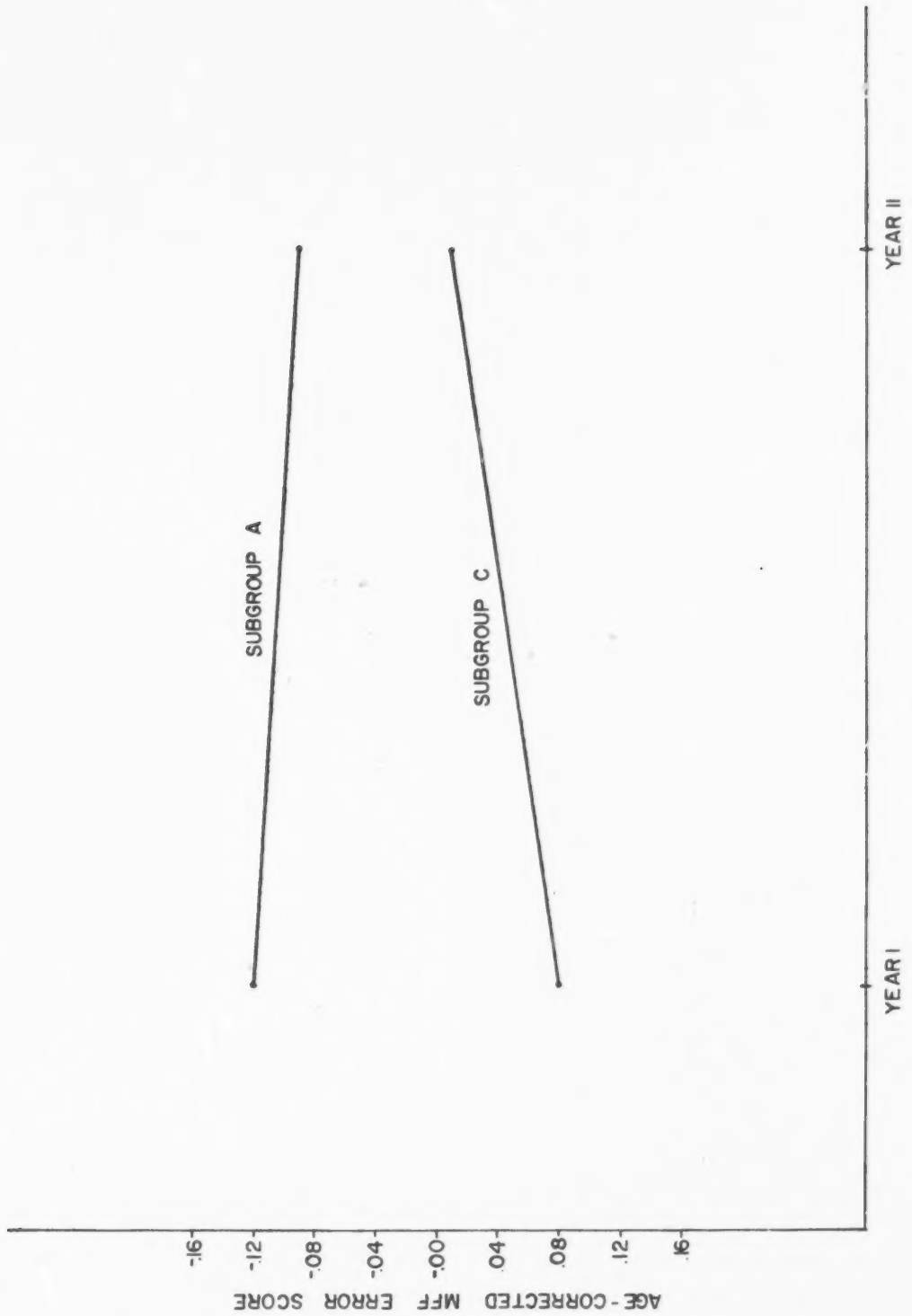


Fig. 3.--Subgroup Differences on MFF Errors

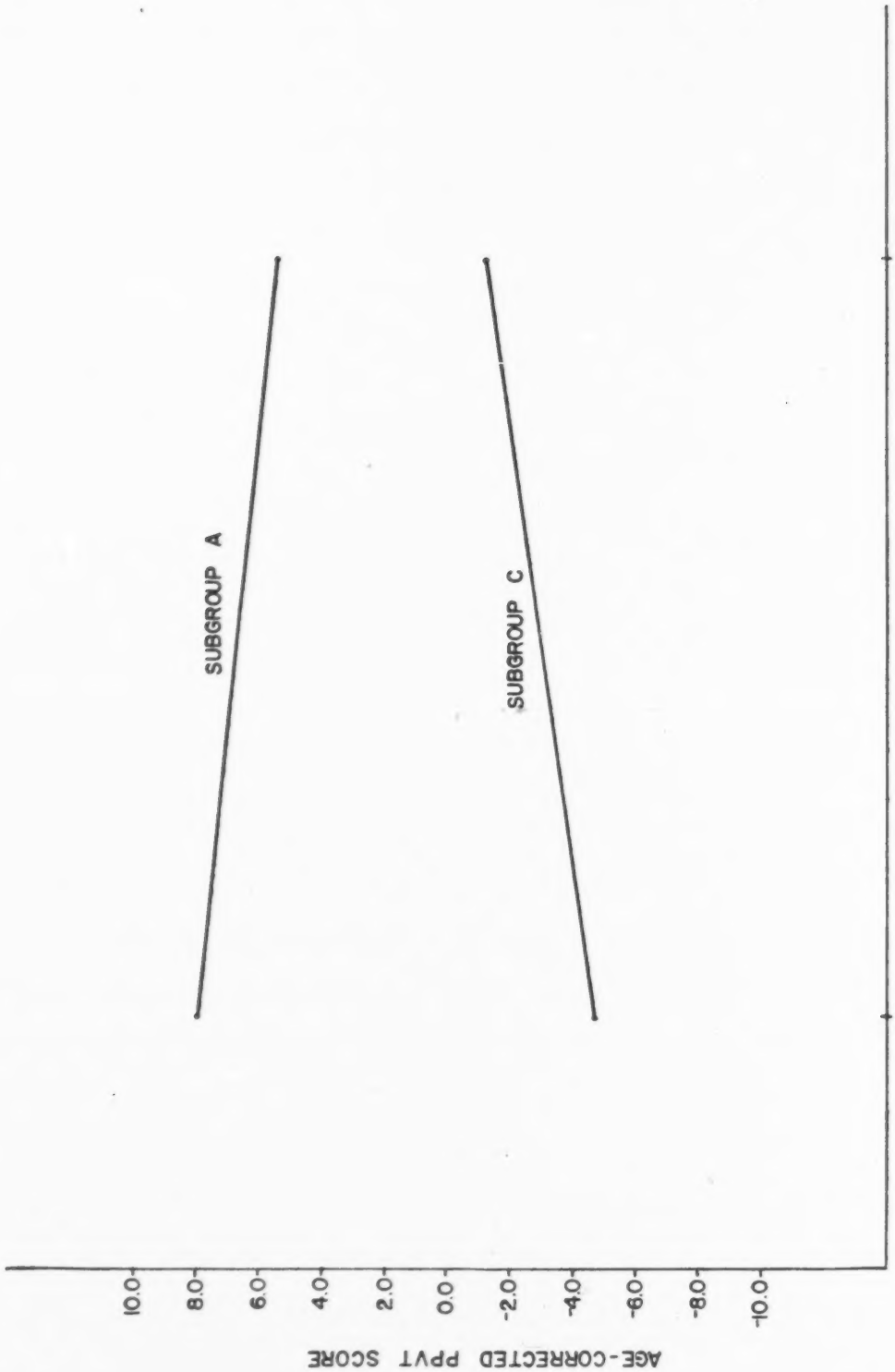
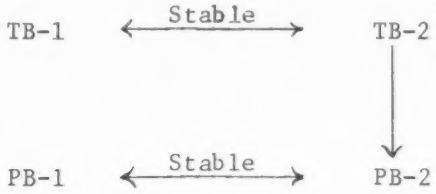


Fig. 4.--A x C Subgroup Differences on the PPVT

Reminiscent of the findings reported in Chapter 3, it is the brighter pupil cohort which elicits the teacher's response of granting greater autonomy to pupils. Once again this model allows for no conclusions concerning the impact of the teacher's response upon subsequent pupil cognitive growth.

Now consider a different state-of-affairs, as depicted in the following diagram:



In this situation, little or no evidence exists for an initial relationship between teacher and pupil characteristics, but such a relationship does emerge toward the end of the school year. Here it can be inferred that the teacher's behavior influences the child rather than the reverse, if it can be shown that the effect occurs on the residual portion of the child variance not accounted for by the child stability correlation.

This situation best describes the two patterns presented in Figures 5 and 6. (In the case of Figure 5, subgroup differences in maternal education were nonsignificant.) In Figure 5, the three teacher-individuation groups initially did not differ significantly with regard to their average pupil scores on the Preschool Inventory measured in Year 1, but these groups did differ ($p < .001$) on this instrument when measured toward the end of the school year (Year 2). Moreover, analysis of covariance (Year 1 Preschool Inventory scores partialled out) yielded essentially the same outcome ($p < .01$). Inspection of the adjusted means in Year 2 (Figure 5) suggests that pupils of

teachers who differentially individuated (High CxR) improved most in cognitive skills during the school year.

The conceptual framework outlined thus far has some difficulty integrating the findings on teacher individuation. When cognitive skill was measured by the PPVT (Figure 1), the model depicting an early impact of pupil cohort upon the teacher's CxR score was found to be applicable. But when cognitive skill was measured by the Preschool Inventory (Figure 5), the model depicting a year-long impact of teacher individuation (High CxR) upon cognitive growth was clearly applicable. A conceptual problem arises because the same teacher characteristic, namely highly differentiated individuation, seems to fit different models depending upon which cognitive skills are involved. Perhaps certain pupil skills are more salient initial cues for the teacher early in the year. Teacher beliefs based upon these early cues might then influence subsequent pupil growth on related but not identical skills. Age-corrected Preschool Inventory and PPVT scores were moderately correlated within both Years 1 and 2 (.55 and .57, respectively), but the fact that different models were applicable to the outcomes for these two instruments suggests that teachers could have responded differentially to the processes tapped by them. The PPVT is a reasonably homogeneous test of verbal knowledge, a pupil skill that is readily perceived by the teacher early in the preschool year. On the other hand, the Preschool Inventory is a broad-band instrument also measuring perceptual-motor and quantitative skills that may be less visible to the teacher early in the preschool year. Moreover, it is possible that the teaching efforts of teachers in the present sample (especially High CxR teachers) were directed more toward accelerating children's perceptual-motor and quantitative skills than

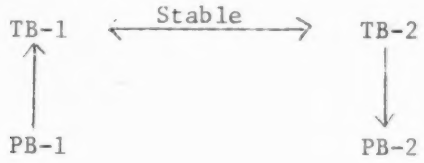
verbal skills. Future studies of the classroom behavior of these teachers may provide further evidence bearing on this interpretation.

Figure 6 presents the B x D subgroup contrast for the Preschool Inventory. It will be recalled that B is a laissez-faire teacher who imposes negative sanctions, while D structures the learning experiences of her pupils and provides positive feedback when the child's behavior meets her standards. It is not surprising, therefore, that pupils of B teachers had lower Preschool Inventory scores toward the end of the school year than pupils of D teachers ($p < .05$). Analysis of covariance (Year 1 Preschool Inventory scores partialled out) yielded essentially the same outcome ($p < .05$). This finding supports the conclusion that teacher structuring together with positive support enhance the cognitive growth of young children.

As seen in Figure 6, subgroups B and D were "naturally" equated in cognitive performance on the Preschool Inventory prior to entry into preschool (Year 1). But these two subgroups were <u>not</u> equated with regard to SES background indexed by maternal education. As seen in Table 20, subgroup B mothers averaged about two years less education than subgroup D mothers ($p < .05$ for unadjusted means, $p < .01$ for adjusted means). While pupils of D teachers were from higher SES backgrounds than pupils of B teachers, this fact was not reflected by initial level differences in performances on the Preschool Inventory. Consequently the present model, which assumes no initial PB-1 x TB-1 relationship, seems to be applicable. However, this pattern also suggests a precautionary note with regard to the above conclusion that D influenced pupils' cognitive growth more favorably than B. An alternative possiblity is that some extraneous factor associated with

child SES became manifest during the preschool year to produce the B x D differences in Year 2 cognitive performances and that this factor operated quite independently of the teachers' differential styles of teaching.

Finally, consider the following diagram:



The key factor in this situation is that pupils are unstable over time and therefore it becomes possible for the direction of teacher-child influence to differ at each of the two time periods. This situation appears to be applicable to certain analyses of Sigel Latencies, as seen in Figures 7 and 8.

In Figure 7 the primary change over time occurred for that subgroup of teachers who were "non-individuators". Pupils of these teachers changed from a rather slow response tempo prior to school entry to a rather quick response tempo toward the end of the preschool year. As seen in Table 20, the initial level difference cannot be accounted for on the basis of SES, since the latter difference was non-significant and the rank ordering of subgroup means on maternal education was different from that for Year 1 Sigel Latency means found in Figure 7. It would thus appear that low individuation is a teacher response to pupil cohorts having relatively slow response tempos, a response which, in turn, influences pupils to increase their response tempos in problem solving. In Chapter 3 there was evidence that especially slow response tempo might be indicative of evaluation anxiety in the child. The present findings further suggest that teachers respond to signs of evaluation

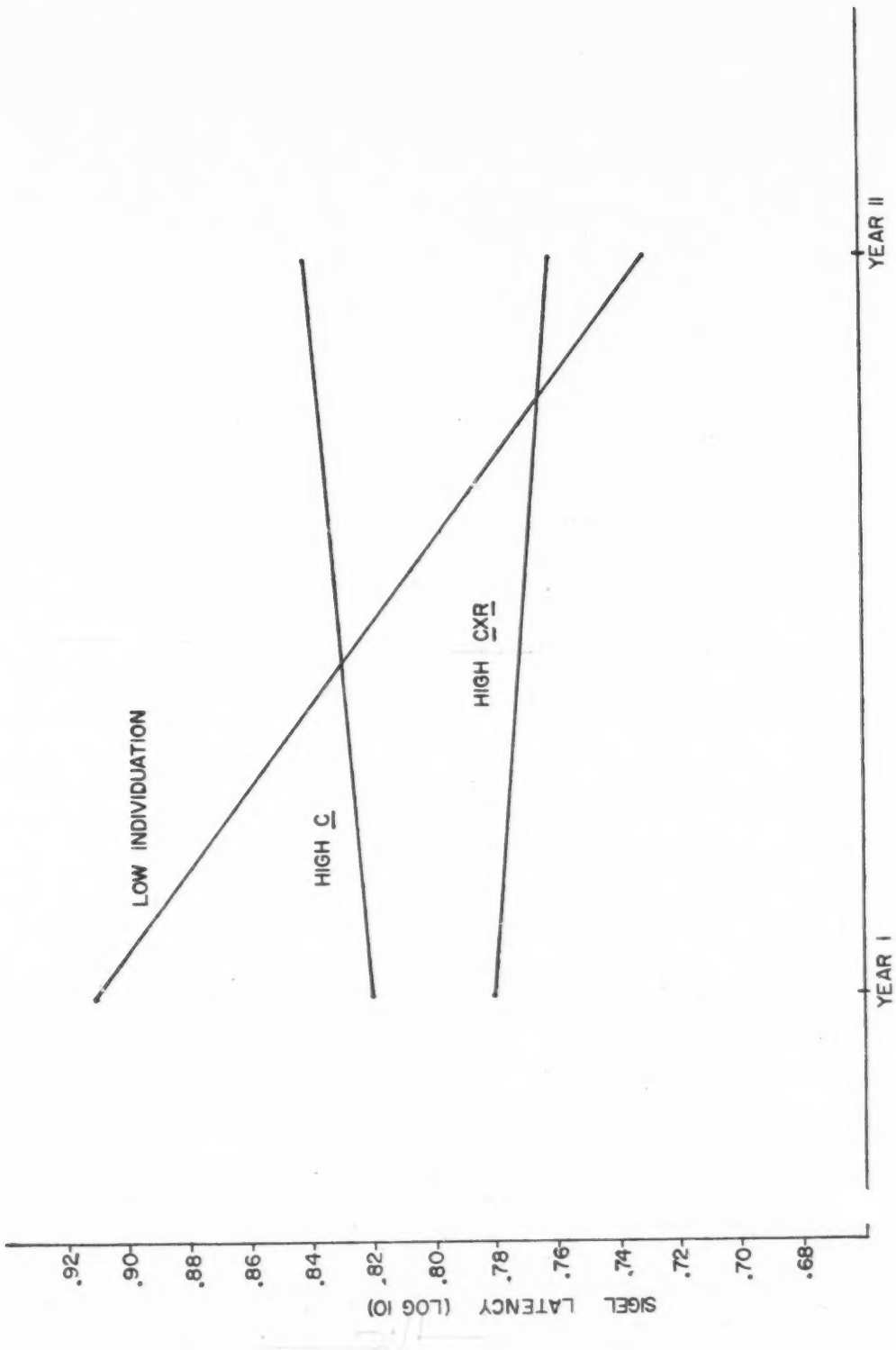


Fig. 7.--Individuation Subgroup Differences on Sigel Latency

anxiety in their pupils' classroom behaviors by decreasing their focus upon the individual child, perhaps in an attempt to minimize evaluations (both positive and negative) and to encourage children to be more autonomous.

The latter interpretation receives additional and more direct support from Figure 8. Here it is indeed the autonomy-granting teacher (Subgroup A) whose pupils exhibited slow response latencies on the Sigel Task prior to preschool entry, relative to the more controlling teacher (Subgroup C). It is noteworthy that A's pupils' mean Sigel Latency score of .96 in Year 1 was well into the "high" classification range (Table 8). By the end of the school year the initial difference between the A and C groups had disappeared.

Of course, changes in Sigel Latency during the school year could be due to regression toward the mean, especially since this measure had low stability between Years 1 and 2 (Furby, 1973). The fact that subgroups were determined on the basis of teacher ELI scores rather than on the basis of extreme Sigel Latency scores in Year 1 reduces somewhat the plausibility of this interpretation (Campbell & Stanley, 1963). Moreover, in the case of Figure 7, pupils of non-individuating teachers did not simply change toward the mean, but went well beyond it, since in Year 2 the mean Sigel Latency of .73 for these pupils represented a rather quick response tempo (Table 8). Nevertheless, regression-toward-the-mean interpretations cannot be ruled out entirely, especially in Figure 8.

In any event, while reduction of evaluation anxiety may be construed as a positive outcome in its own right, the present evidence does not indicate that it is associated with increased cognitive <u>skill</u> during this age period.

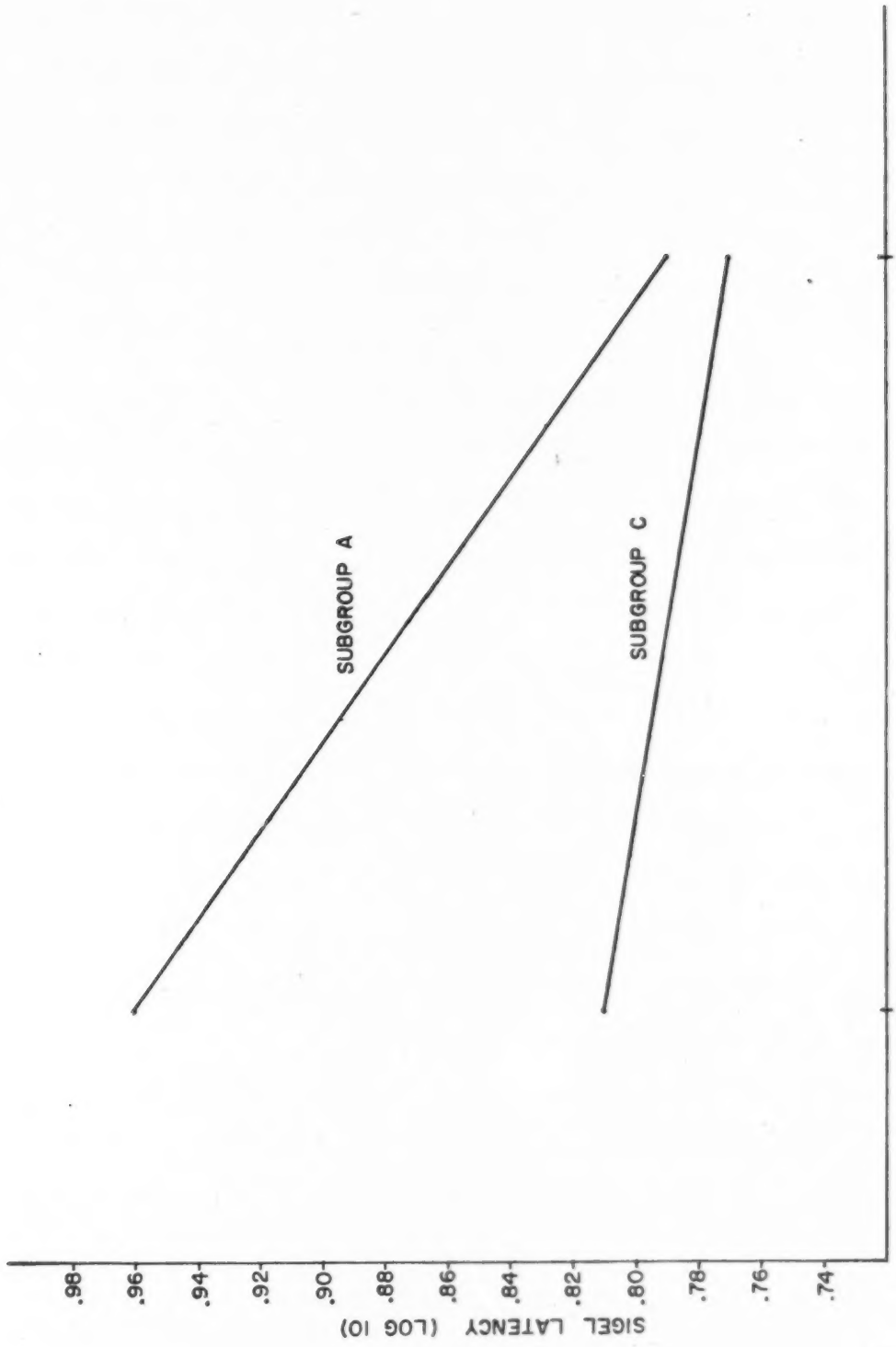


Fig. 8.--A x C Subgroup Differences on Sigel Latency

Indeed, comparison of outcomes in Figures 5 and 7 reveals that while non-individuating teaching may increase the child's response tempo, such a change is not necessarily associated with accelerated cognitive growth, and that while differentiated individuation (CxR) may induce greater cognitive growth, it is unrelated to changes in response tempo during the school year. In short, teaching style variations appear to influence the development of cognitive skill and response tempo in different ways, at least in the short-run during the preschool period in economically disadvantaged children.

Chapter 5

Summary and Conclusions

The Enhancement of Learning Inventory (ELI) was constructed to assess a teacher's beliefs about the effectiveness of a variety of methods for teaching each pupil in her classroom. It was expected that the patterning of such beliefs would (1) reliably describe characteristics on which teachers differ, (2) relate to individual differences in pupil background and behavioral characteristics, and (3) provide a mediating structure guiding the teacher's role performances and their impact upon pupil psycho-educational development. The present study examined these issues empirically using the ELI judgments of 35 teachers of economically disadvantaged preschool children, most of whom were enrolled in Head Start.

Individual differences among teachers were found to have satisfactory reliabilities on a variety of ELI measures (Chapter 2), including individual teaching technique endorsements, teacher total scores (summed across techniques), teaching method profile scatter, and teaching style (profile ranks). Also reliable were two indexes of teacher individuation; the first a global orientation which classifies children either as more or less receptive to classroom learning irrespective of the teaching method applied, and the second a more differentiated form of teacher individuation in which different substantive teaching styles (profiles) are believed to be differentially effective depending upon the pupil judged. Reliabilities (as well as other properties) of these measures at higher grade levels (and for middle class pupils) remain to be established.

Individual differences in pupil family background characteristics were related to teachers' beliefs about the effectiveness of teaching techniques

(Chapter 3). For example, pupils whose mothers had more years of school were judged by teachers as generally more receptive to classroom learning. Also, severe maternal punitiveness in response to minor child infractions of social norms was associated with a tendency for the child to be judged as relatively unreceptive to learning in the classroom context.

However, processes engaged by classroom learning (cognitive skills and style) were more strongly and consistently related to teacher beliefs than were child-family background characteristics, presumably due to the latter's indirect connection with pupil classroom performances (Chapter 3).

Pupils exhibiting relatively high levels of cognitive skill prior to preschool were judged by teachers generally as most capable of classroom learning, especially when pupils are given considerable autonomy in structuring their classroom learning experiences. Pupils with moderate response tempos were perceived as more receptive to teaching efforts than children with rapid response tempos. However, pupils with the slowest response tempos were judged as often posing the greatest teaching challenge, perhaps because these children were overly cautious in dealing with new tasks due to fear of failure or evaluation anxiety. More precise descriptions of pupil behavioral correlates of response tempo may be possible in future studies that relate test response tempo measures to pupils' personal-social behaviors in the classroom.

Girls were perceived by teachers as generally more receptive to classroom learning than boys, especially among pupils who were older at the time of school entry. These findings were consistent with independent observational evidence that (a) girls more than boys engage in classroom activities which teachers are likely to define as "learning," and that (b) sex typing increases with age during the preschool period.

With regard to ELI judgments as measures of teacher characteristics (Chapter 4), the total score proved to be unrelated to pupil characteristics, suggesting that this overall index of the teacher's beliefs concerning ease-of-learning in her classroom reflects a response set that is more related to the instrument's format than to teacher-pupil relationships at this grade level.

Positive findings on relationships between teacher ELI measures and pupil characteristics were interpreted using a scheme depicting mutual influences between teacher and pupil (Chapter 4). This model provided a systematic framework for interpreting most of the statistically significant outcomes. The conclusions that follow are to be considered tentative, however, since several untested assumptions were incorporated into the model.

Teachers who individuated among their pupils within the classroom by classifying some children more than others as generally less receptive to learning (irrespective of teaching method) tended to have pupils who, in fact, generally were less verbally skilled on the Peabody Picture Vocabulary Test. This difference was present both at the beginning and toward the end of the preschool year, indicating that this form of individuation is an initial response of the teacher to the verbal skill levels of her pupils in a given year.

However, teachers who individuated by applying different teaching styles (profiles) to different pupils had pupils who showed cognitive growth during the preschool year, at least when measured by a broad-band instrument (Preschool Inventory). Teachers who least believed in an individuation strategy (of either kind noted above) were found to have pupils whose

response tempos increased during the preschool year, perhaps because a non-individuating stance by these teachers reduced their pupils' concerns about fear of failure.

Substantive teaching styles (teaching method belief profiles) were largely unique and generally could not be classified into types. Subgrouping of certain teachers according to profile was possible, however. Subgroup A believed that it is more effective to grant children autonomy in structuring their own learning experiences within the classroom than to control their performances through positive and negative evaluations. Subgroup C exhibited the opposite belief pattern. Pupils of Subgroup A teachers generally were brighter than those of Subgroup C teachers, but this was the case prior to school entry as well as toward the end of the preschool year. Thus, once again, beliefs about effective teaching style appeared to be a response to characteristics of the teacher's pupils in a given year. Subgroup A's autonomy-granting beliefs also were linked to the reduction of response tempo (from a slow initial level) during the year, suggesting that autonomy granting on the teacher's part did reduce pupil evaluation-anxiety. The latter interpretation is especially tentative due to the possible influence of regression toward the mean.

Subgroup B teachers believed that pupils should be allowed considerable freedom in the classroom while also favoring use of relatively harsh negative control when a child's behavior "gets out of hand." Subgroup D held opposite beliefs, favoring more structuring by the teacher together with use of positive evaluation only. There was evidence that Subgroup D teachers stimulated the cognitive growth of their pupils to a greater extent during the school year than did Subgroup B teachers. Apparently the latter's beliefs in the

effectiveness of a laissez-faire atmosphere together with use of negative evaluation as a primary control mechanism inhibited their pupils' active engagement in classroom learning. This interpretation remains tentative, however. Subgroup B included pupils whose mothers attended fewer years of school than Subgroup D. There is the possibility that the B x D difference in cognitive growth was due to some factor associated with the SES difference that was extraneous to the difference in teaching styles.

It can be concluded from this study that ELI measures of pupils and teachers are related to independently measured pupil behavioral and family background characteristics during the preschool year in an economically disadvantaged population. Far from being epiphenomenal, teacher belief patterns clearly were functionally related to pupil characteristics. Whether teacher's patterns of ELI judgments are related to other teacher status and personality characteristics and to specific teacher behaviors in the classroom remain questions for further study.

Perhaps the most striking feature of the findings is the extent to which pupil cognitive skills and response tempo at the time of preschool entry influenced the teachers' beliefs about effective teaching methods. While there was also evidence that teacher belief patterns influence certain aspects of pupil psycho-educational development during the preschool year, the present findings indicate that pupil behavioral characteristics may have a greater impact upon teacher behavior than vice-versa. Clearly, the teacher's manner of coping with individual differences in children's initial receptivity to classroom learning is a critical factor determining subsequent relationships between teacher and child.

TM 003 020

Appendix A

Enhancement of Learning Inventory (ELI)

Name: _____

I.D.#: _____ Date: _ _/ _ _/ _ _

Name of School or Center: _____

Address: _____

ENHANCEMENT OF LEARNING INVENTORY

YOUNG CHILDREN AND THEIR FIRST SCHOOL EXPERIENCES
A LONGITUDINAL STUDY

Copyright © 1970, Educational Testing Service, Princeton, N. J. 08540

1

Child's Name: _____

Child's I.D.#: _____

ENHANCEMENT OF LEARNING INVENTORY

Instructions

Perhaps the most important feature of a teacher's job is to enhance the learning opportunities of his or her pupils. In this inventory we are interested in your judgments concerning the kinds of teaching techniques that are effective (or ineffective) in helping the child learn.

Listed below are fifteen different teaching techniques which might be applied in the classroom. We ask you to judge the effectiveness of each technique for each child in your class. For example, think about _____. Now consider each of the fifteen techniques given below and decide whether it is an effective way to enhance this child's classroom learning. (It may be helpful to think about actual examples of the child's behavior in the classroom.) Please indicate your judgment to each listed technique in the space provided, using the following scale:

Mark 3 if the technique would be very effective for teaching this child.
Mark 2 if the technique would be moderately effective for teaching this child.
Mark 1 if the technique would be slightly effective for teaching this child.
Mark 0 if the technique would be ineffective for teaching this child.

(Note: You may have some questions about this procedure as you try it out. If so, turn to the next page and see if your questions are answered.)

_____A. Take initiative in planning and setting up learning experiences for the child.

_____B. Give the child individual instruction.

_____C. Inform the child when he makes a mistake.

_____D. Express pleasure or praise when the child's behavior meets your standards.

_____E. Instruct a group of children simultaneously, with the child as one member of this group.

_____F. Instruct by doing the task first, then letting the child imitate you.

_____G. Increase the difficulty or complexity of a learning task.

_____H. Express displeasure or criticism when the child's behavior does not meet your standards.

_____I. Instruct by explaining a task's requirements to the child verbally before or while the child does the task.

_____J. Inform the child when he makes a correct response.

_____K. Give the child considerable freedom to choose and carry out learning tasks on his own.

_____L. Let the child learn directly from other children in the classroom.

(Proceed to items M-O on next page.)

_____M. Express approval when the child's behavior meets the child's own standards.

_____N. Encourage the child to express his feelings, ideas, and/or skills.

_____O. Let the child discover his own mistakes.

Further Instructions: Clarification of Procedure

1. Do not mark more than one scale number next to each item.

2. It is very important that you answer all items about the child, even when you feel uncertain about your response.

3. A teaching technique may be more effective at certain times than at others, depending upon the child's mood. Always indicate the child's typical response to the technique.

4. Perhaps you have not actually tried a listed technique with a child. In this case, make your judgment by predicting how the child would respond to the technique if you tried it.

5. When you have made all fifteen judgments, proceed to the Final Instructions given below.

Final Instructions

1. In the remainder of this Inventory, you are asked to make judgments about other children in your classroom. For each child listed, indicate your judgments according to the above procedures.

2. There are no time limits, but do not spend too much time on any one child or item.

3. Finish each child before proceeding to the next.

4. You may refer back any time to the instructions on this page or on the preceding page.

Your cooperation in completing this Inventory will be invaluable to us, since you know these children so well. We are most appreciative of your help. Your judgments will be kept in strictest confidence and will be used for research purposes only.

If any aspect of the above procedure remains unclear, do not hesitate to seek clarification from the person administering this Inventory to you.

Child's Name: _____

Child's I.D.#: _____

Mark 3 if the technique would be very effective for teaching this child.
Mark 2 if the technique would be moderately effective for teaching this child.
Mark 1 if the technique would be slightly effective for teaching this child.
Mark 0 if the technique would be ineffective for teaching this child.

_____A. Take initiative in planning and setting up learning experiences for the child.

_____B. Give the child individual instruction.

_____C. Inform the child when he makes a mistake.

_____D. Express pleasure or praise when the child's behavior meets your standards.

_____E. Instruct a group of children simultaneously, with the child as one member of this group.

_____F. Instruct by doing the task first, then letting the child imitate you.

_____G. Increase the difficulty or complexity of a learning task.

_____H. Express displeasure or criticism when the child's behavior does not meet your standards.

_____I. Instruct by explaining a task's requirements to the child verbally before or while the child does the task.

_____J. Inform the child when he makes a correct response.

_____K. Give the child considerable freedom to choose and carry out learning tasks on his own.

_____L. Let the child learn directly from other children in the classroom.

_____M. Express approval when the child's behavior meets the child's own standards.

_____N. Encourage the child to express his feelings, ideas, and/or skills.

_____O. Let the child discover his own mistakes.

YOUNG CHILDREN AND THEIR FIRST SCHOOL EXPERIENCES
A LONGITUDINAL STUDY

Appendix B

Maternal Interview Measures

1. Classifications
2. Outcome Summaries

Appendix B-1

Independent Variable Classifications: Maternal Interview

Item or Group	Classification Criteria* High	Low	Cell Sizes High	Med.	Low
Gp. 10	7-8	0-4	112	144	59
45	13-20	8-11	78	198	38
199-204	5-6	0-3	151	103	121
Gp. 3	7-9	0-4	129	110	136
86-99%	≥ 49.500	≤ 25.499	124	130	121
Gp. 13	2-6	0	101	110	164
SDK	8-22	0-2	76	186	113
Gp. 12	8-11	0-3	87	193	95
111	1	0	143		232
17	2-3	1	159		204
38	3-5	0	144	168	56
50	1-5	6-8	211		155
25-30	≥ 7.001	≤ 4.999	101	158	114
119-124	1-7	0	212		163
183	2-8	0	122	110	127
195	≥ 1.250	≤ .749	117	167	87
AA	≥ .750	≤ .299	89	190	95

*When applicable, subjects falling between the high and low cutting points were classified as "medium."

Appendix B-2(a)

Summary of Results for the Maternal Interview Measures

Dependent Variable	Group 10				Item 45				199-204			
	High	Med.	Low	F-Values	High	Med.	Low	F-Values	High	Med.	Low	F-Values
Summary Score	.02	.36	- .96	.74	.54	- .06	- .62	.39	.49	- .58	- .13	.75
Item 1	- .02	.11	- .07	1.20	.02	- .02	.00	.06	.03	- .02	.04	.11
Item 2	.08	.00	.05	.28	- .03	.10	- .07	.96	.07	- .07	.11	1.21
Item 3	.01	- .04	.05	.23	.04	- .06	- .02	.30	.02	- .06	.01	.23
Item 4	- .10	- .02	.02	.60	- .11	- .04	- .06	.20	.00	- .07	- .10	.51
Item 5	.01	.10	- .16	1.58	.15	- .04	.00	1.22	.02	- .01	.04	.08
Item 6	- .03	.08	- .03	.48	- .02	.07	- .02	.27	.10	- .07	- .04	1.10
Item 7	.02	.07	- .33	3.79*	.25	- .10	.01	3.73*	.06	- .02	- .10	.88
Item 8	.06	- .08	- .15	1.18	.12	- .10	.03	1.45	.03	- .08	- .04	.35
Item 9	.05	.08	.04	.05	.11	.08	.13	.05	.02	.00	.16	.88
Item 10	.00	.05	.20	1.19	.01	.10	- .03	.61	.06	.01	.06	.12
Item 11	- .02	.04	- .11	.56	- .03	- .02	.09	.21	- .02	- .01	.00	.01
Item 12	.01	.04	- .16	.95	- .01	.00	- .03	.02	.07	.05	- .14	1.82
Item 13	.03	- .14	- .09	1.47	- .15	.03	- .33	2.92	.01	- .11	- .08	.62
Item 14	- .04	.03	- .09	.36	.09	- .03	- .12	.74	.05	- .06	- .09	.87
Item 15	- .03	.05	- .13	.68	.08	- .03	- .20	.98	- .02	- .08	.04	.43

*$p < .05$

Appendix B-2(b)

Summary of Results for the Maternal Interview Measures (Cont'd)

Dependent Variable	Group 3 86-99%				Group 13			
	High	Med.	Low	F-Values	High	Med.	Low	F-Values
Summary Score	-1.20	.66	.59	2.89	.50	- .48	.00	.62	- .38	- .64	.65	1.32
Item 1	- .09	.10	.06	1.54	.09	- .08	.06	1.26	.07	- .04	.03	.39
Item 2	- .08	.07	.14	1.95	.13	- .02	.02	1.04	.10	.03	.01	.34
Item 3	- .10	.10	.01	1.25	.17	- .09	- .08	2.85	- .02	- .03	.03	.15
Item 4	- .18	.01	.03	2.55	.03	- .07	- .12	1.05	.03	- .14	- .04	1.21
Item 5	- .03	.04	.04	.25	.03	.02	- .02	.10	- .11	.01	.10	1.56
Item 6	- .15	.02	.16	3.16*	.12	- .12	.04	1.83	- .05	- .02	.07	.54
Item 7	- .09	.01	.04	.63	- .12	.00	.08	1.31	- .10	- .10	.10	1.90
Item 8	- .11	- .10	.12	2.10	- .02	- .08	.03	.42	- .04	- .12	.05	.95
Item 9	- .11	.13	.16	2.96	- .01	.07	.12	.58	.03	.00	.12	.58
Item 10	.03	.13	.01	.66	.11	- .01	.05	.57	.07	- .06	.11	1.26
Item 11	- .03	.08	- .07	.76	.03	- .12	.07	1.31	- .05	.03	- .01	.17
Item 12	- .06	.07	- .03	.57	.01	.07	- .10	.98	- .04	- .06	.05	.49
Item 13	- .05	.02	- .12	.69	- .11	.01	- .07	.58	- .05	- .11	- .02	.33
Item 14	- .06	- .08	.05	.71	- .02	- .02	- .03	.00	- .12	.00	.02	.69
Item 15	- .09	.07	- .02	.71	.06	- .05	- .06	.52	- .09	- .03	.04	.54

*$p < .05$

Appendix B-2(c)

Summary of Results for the Maternal Interview Measures (Cont'd)

Dependent Variable	SDK				Group 12				Item 111		
	High	Med.	Low	F-Values	High	Med.	Low	F-Values	High	Low	F-Values
Summary Score	- .20	- .09	.27	.13	.31	.00	- .30	.17	- .08	.04	.02
Item 1	.03	.04	- .02	.17	.12	- .01	.00	.64	- .05	.06	1.27
Item 2	- .10	.05	.13	1.47	.02	.08	.00	.27	.01	.06	.37
Item 3	.02	- .04	.05	.30	.00	- .04	.06	.35	- .02	.01	.08
Item 4	.06	- .11	- .02	1.29	- .06	- .02	- .11	.41	- .06	- .05	.01
Item 5	.07	- .02	.04	.31	.03	- .02	.08	.42	.04	.00	.14
Item 6	- .03	.04	- .01	.14	.13	- .02	- .02	.76	- .10	.08	2.77
Item 7	.00	- .03	.00	.04	.03	- .02	- .04	.12	- .01	- .01	.00
Item 8	.10	- .05	- .08	.83	.08	- .07	- .03	.74	.01	- .05	.33
Item 9	- .03	.10	.06	.43	.01	.05	.13	.32	.08	.05	.08
Item 10	.02	.03	.10	.32	.09	.03	.05	.15	.00	.08	.91
Item 11	- .18	- .01	.10	1.88	- .16	.03	.03	1.24	.04	- .04	.50
Item 12	.01	- .02	.00	.03	.02	.05	- .15	1.43	.01	- .02	.06
Item 13	- .10	- .04	- .04	.12	- .08	.02	- .18	1.71	- .10	- .02	.61
Item 14	- .13	- .02	.05	.87	.04	- .04	- .03	.23	.07	- .08	2.43
Item 15	.05	.01	- .09	.54	.05	- .01	- .09	.43	.01	- .03	.17

*$p < .05$

Appendix B-2(d)

Summary of Results for the Maternal Interview Measures (Cont'd)

	Item 17			Item 38				Item 50		
Dependent Variable	High	Low	F-Values	High	Med.	Low	F-Values	High	Low	F-Values
Summary Score	- .13	.19	.18	.88	- .39	-1.18	2.17	.65	- .92	4.49*
Item 1	- .01	.05	.41	.08	- .04	.03	.66	- .01	.06	.52
Item 2	.06	.02	.18	.13	.01	- .05	1.03	.02	.06	.14
Item 3	- .01	.02	.11	- .07	.07	.00	.86	- .03	.03	.40
Item 4	- .07	- .04	.09	- .10	- .02	.04	.70	- .01	- .12	1.59
Item 5	.03	.00	.10	.12	- .05	- .10	1.70	.08	- .06	2.09
Item 6	- .03	.04	.36	.09	- .04	- .06	.78	.06	- .08	1.71
Item 7	.02	- .02	.19	.07	- .09	.04	1.07	.07	- .14	4.11*
Item 8	.02	- .01	.09	.01	- .07	.02	.29	.03	- .09	1.28
Item 9	.00	.09	.81	.11	.09	- .17	1.75	.06	.05	.01
Item 10	- .03	.11	2.45	.05	.05	.03	.01	.12	- .04	3.07
Item 11	- .01	- .01	.00	.14	- .07	- .20	3.12*	.08	- .13	4.08*
Item 12	- .01	.00	.03	.06	- .05	- .09	.73	.06	- .11	2.78
Item 13	- .05	- .05	.00	.01	- .07	- .19	1.02	.01	- .14	2.47
Item 14	.01	- .03	.15	.15	- .13	- .18	4.43*	.02	- .07	.96
Item 15	- .05	.02	.46	.03	.02	- .29	2.41	.08	- .14	4.26*

*$p < .05$

Appendix B-2(e)

Summary of Results for the Maternal Interview Measures (Cont'd)

Dependent Variable	25-30				119-124			Item 183			
	High	Med.	Low	F-Values	High	Low	F-Values	High	Med.	Low	F-Values
Summary Score	.41	- .23	- .14	.28	.00	- .01	.00	- .79	.91	.17	1.69
Item 1	.14	.03	- .09	1.84	.05	- .02	.70	.05	.01	- .02	.18
Item 2	.16	- .05	.05	1.71	.05	.03	.06	- .05	.08	.13	1.33
Item 3	.12	- .04	- .08	1.32	- .01	.00	.01	- .06	.03	.04	.41
Item 4	- .02	- .08	- .04	.16	- .10	.01	1.80	- .03	- .07	- .04	.07
Item 5	.01	- .05	.10	.79	.10	- .09	3.71	- .04	.19	- .07	2.49
Item 6	.09	- .13	.15	2.78	- .07	.12	3.63	- .10	.04	.06	.89
Item 7	- .13	.05	- .01	1.05	- .01	- .01	.00	- .07	.06	.02	.61
Item 8	- .04	- .02	- .02	.01	- .06	.02	.58	- .17	.06	.07	2.30
Item 9	.14	.05	.00	.60	.06	.06	.00	- .13	.12	.21	3.82*
Item 10	.04	.05	.05	.00	.07	.02	.28	.05	.14	- .02	1.08
Item 11	- .07	.02	- .01	.24	- .03	.01	.14	- .02	.16	- .09	2.20
Item 12	.02	.03	- .09	.59	- .02	.01	.04	- .13	.12	.02	2.16
Item 13	- .02	- .12	- .01	.54	- .04	- .07	.05	.02	- .08	- .06	.44
Item 14	- .06	.03	- .06	.38	- .02	- .02	.00	- .01	- .03	- .04	.02
Item 15	.01	- .01	- .07	.18	.03	- .07	.87	- .09	.08	- .04	.92

*$p < .05$

Appendix B-2(f)

Summary of Results for the Maternal Interview Measures (Cont'd)

Dependent Variable	Item 195 High	Med.	Low	F-Values	AA High	Med.	Low	F-Values
Summary Score	.19	.33	- .95	1.03	1.44	- .54	- .27	2.52
Item 1	.00	.02	.04	.04	.10	- .08	.13	2.18
Item 2	.03	.03	.07	.06	.03	.03	.08	.10
Item 3	- .04	- .02	.05	.20	.07	- .08	.07	1.20
Item 4	- .04	- .10	.03	.76	- .07	- .11	.08	1.78
Item 5	.03	.07	- .15	1.54	.18	- .07	.03	1.97
Item 6	.01	.11	- .18	2.43	.07	.01	- .02	.19
Item 7	.01	.04	- .15	1.11	.16	- .01	- .20	3.18*
Item 8	- .06	- .02	- .03	.04	.14	- .01	- .23	3.33*
Item 9	.04	.11	- .02	.56	.28	- .03	.03	3.12*
Item 10	.18	.00	.02	1.94	.16	- .02	.09	1.63
Item 11	- .07	.10	- .13	1.92	.02	.02	- .10	.54
Item 12	.11	- .05	- .09	1.42	.13	- .04	- .08	1.25
Item 13	- .05	.01	- .12	.62	.05	- .16	.12	3.95*
Item 14	.02	.03	- .20	1.91	.12	- .02	- .16	1.99
Item 15	.01	.01	- .09	.36	- .01	.04	- .11	.68

*$p < .05$

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